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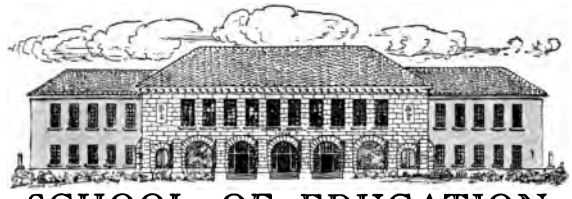

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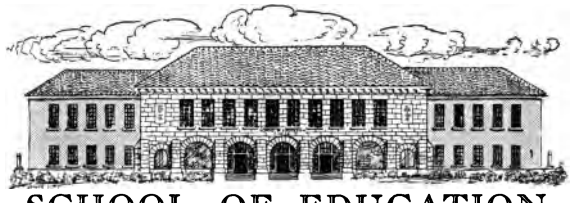

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VOLUME III

Sh. Acad.

THE TEACHING OF ECONOMICS IN HARVARD UNIVERSITY

A REPORT PRESENTED BY THE DIVISION OF EDUCATION AT THE REQUEST OF THE DEPARTMENT OF ECONOMICS

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NOTE

THIS volume includes substantially the complete Report presented to the Department of Economics and to the President of the University in September, 1916. A few corrections and emendations have been made at the suggestion of members of the Department and of the President; and in the interests of brevity a certain amount of material, presented in full in the Report, has here been represented by examples only, or merely referred to. Names have, of course, been omitted, and in some cases the numbers and titles of courses. A few sections of the Report have been revised to emphasize their general bearing rather than their specific application or the circumstances under which they were first written. The Report is published in the conviction that the problems with which it deals, the method it seeks to exemplify, and the conclusions it embodies are properly of interest to college teachers, not only of Economics but of other subjects, not only in Harvard College but in other colleges. Certainly the growing desire to render college curricula and college teaching more effective for educational ends justifies the presentation of any sincere attempt to deal comprehensively and in a scientific spirit with the teaching of an important college subject.

PREFACE

THE inspection of which this Report makes record is apparently without precedent. There have been investigations of certain aspects of college teaching, and studies of various phases of college administration, and there have been collections of tests and standards for college instruction; but never before, within the knowledge of those who undertook this task, has one college department turned to another, even to the department professionally concerned with the problems of teaching, with the invitation to study its courses with all possible thoroughness, without limitation of time or other condition whatsoever, and with assurance of cordial welcome, support, and assistance.

The invitation bespoke the fact, of which the whole Inspection has given further evidence, that the Department of Economics feels a vital concern in problems of teaching, quite apart from its concern in Economics as a subject; and it implied the belief that teaching may be approached in a scientific attitude of mind and improved as a result of scientific study. In other words, the invitation bore witness to the presence and persistence in college instruction, and specifically in the teaching of Economics, of pedagogical problems not easy to solve either in the light of personal opinion or of unorganized and uncriticized experience.

An inspection by colleagues whose whole interest centers in such problems was a reasonable proposal, which it was almost impossible not to accept. Although the Division of Education could not wholly foresee how much of the work would have to be done under distractions at times almost

fatal to sustained effort, it recognized fully the magnitude of the undertaking and saw in it an exceptional opportunity for the objective study of educational problems in the college. The Division therefore applied itself to the task with full consciousness of its possibilities and its importance. We have tried to face fundamental questions, however difficult, as they appeared, and to deal with them broadly. Although we have kept close to the facts secured in the course of the Inspection, we have not sought to escape from consideration of situations and issues with which all college teachers are concerned.

We beg to express to the members of the Economics Department our appreciation of their interest and assistance. Professor Bullock, as Chairman of the Department, and Professor Day, because of his connection with the large introductory course, have been most burdened with our requests for information and help, and we are especially indebted to them for their constant and ungrudging cooperation.

The Inspection has been the work of all the present members of the Division of Education, as well as two former members: Dr. F. W. Ballou, now Assistant Superintendent of Schools in Boston, and Mr. D. H. Fletcher, '99, now Headmaster of the Detroit University School. Without the highly competent assistance of Dr. Alfred Johnson, '98, the large tables summarizing the questionnaires could not have been completed, and the subsequent discussion of them owes much to Mr. Roy Kelly, A.M., '16. In the production and interpretation of charts and tables we have had valuable help from Mr. E. A. Shaw, A.M., '16, Mr. L. G. Burgevin, '15, Miss Eleanor Abbott, Mr. L. P. Damon, A.M., '16, Mr. E. A. Lincoln, '13, Mr. R. P. Currier, '12, Mr. C. R. Small, '09, and Mr. H. A Sturgis.

The Division of Education presents this Report to the

Department of Economics and to the President of the University without expectation — as perhaps need hardly be remarked — that it will offer final solutions for the many and important problems which present themselves in the teaching of Economics at Harvard. We have made every effort, however, to provide an adequate basis of fact for the study of those questions we felt competent to consider, and to discuss them comprehensively. It goes without saying that we shall take the most genuine interest in further discussions or inquiries concerning any of the facts or conclusions presented in this Report.

PAUL H. HANUS,
GEORGE E. JOHNSON,
ERNEST C. MOORE,
WALTER F. DEARBORN,
ALEXANDER J. INGLIS,
JOHN M. BREWER,
HENRY W. HOLMES,
Chairman.

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THE TEACHING OF ECONOMICS IN HARVARD UNIVERSITY

THE TEACHING OF ECONOMICS IN HARVARD UNIVERSITY

CHAPTER I

THE INSPECTION AS A WHOLE

I. Conduct of the Inspection

The invitation to undertake the Inspection was presented and accepted in October, 1912, but no work of importance could be undertaken until 1913, owing to temporary absences of members of the Division of Education during the first half of that academic year. During the second half of the year plans for the Inspection were completed and discussed with members of the Department of Economics and with President Lowell. Two of the studies presented in this Report were begun, and two others attempted which proved impossible to carry out. Chapter VII of this Report, on Marking, and Sections I, II, III, and IV of Chapter IV, on Minor Quantitative Studies, are based on the work done in the spring of 1913. On October 29, 1913, a conference between the Department of Economics and the Division of Education was held in Dane Hall, at which were presented a preliminary report on the studies begun the previous spring and the completed and revised plans for the Inspection. The work of the academic year 1913–14 consisted of an inquiry concerning the study habits of undergraduates, reported in Section II of Chapter IV; an analysis of statements of aim by the instructors in Economics, reported in Chapter II; the transcription on to special cards of 3863 college records

of students (Classes 1903–13) who had taken a course or courses in Economics; and the preparation of most of the charts and tables used in Chapter III. The visits to classrooms began in the spring of 1914 and continued during the succeeding academic year, 1914–15. The other work of that year was the preparation of the questionnaires, which were sent out in February and March, 1915. The academic year 1915–16 was spent in collating the data supplied by the returns to the questionnaires and in writing the Report.

At every stage of the Inspection we have found it profoundly interesting; but the distractions against which we often had to contend have lessened the satisfaction we should otherwise have taken in it, and in some cases have prevented us from completing particular studies and experiments, as the Report will indicate. If a similar investigation is ever carried on under University auspices we would earnestly recommend that one man, designated by the department or committee in charge of the investigation, be given full authority and freed from all other duties for at least a year. He ought to have clerical assistance and the coöperation of competent graduate students, as well as opportunity to confer with the other members of the department or the committee conducting the investigation. The whole department or committee should be responsible for the methods and conclusions; but at least one person should be enabled to give to the investigation his undivided attention.

II. Aims

With complete freedom to conduct the Inspection according to our own plans, we formulated at the outset several general principles which we considered, and now record, as sound — indeed necessary — for the guidance of such an

undertaking. We held, first of all, that our standpoint throughout should be strictly educational, and hence that we had no immediate concern with the highly important work of the Department or of its individual members in advancing Economics as a science or in serving the public, philanthropic institutions, or the business world — except, of course, as such service reacts on teaching. Our inquiry therefore kept constantly in view the only educational end in itself there is — the individual student; and our primary concern was with the undergraduate. Concerning the effects of instruction in Economics on the character, the competence, and the career of the student, of whatever class, we desired to secure the fullest information possible; and our second principle was that this information should constantly be sought in the form of verifiable and preferably quantitative records, so that our conclusions and recommendations might have a firm basis of fact. We did not suppose that all our studies could be statistical, for the data of education cannot always be treated statistically with the greatest profit; but we wished to avoid, so far as possible, either mere opinion based on personal observation which cannot be confirmed, or appeal to general principles which are still subject to discussion. As a corollary to this, we held that the Inspection should be wholly impersonal. We did not feel called on to criticize the teaching of individual instructors, not only because the task would have been ungrateful to us, but for the more technical reasons stated in the first section of the chapter on Method. Questions of method, important as they are, are not as significant in education as is sometimes supposed; aims are more important, and the general organization of means and materials also. Method lies rather within the art of education than within the science of it, and must be acquired by practice and continued supervision. We felt, therefore, that our results and recommenda-

tions ought to be general and that data as to particular courses ought, if they came to us, to be turned over to the Department simply for what they might be worth.

We decided, also, not to hesitate to deal with any problem in its most general form, provided our data justified us in dealing with it so. Thus the chapters on Aims, on Methods, and on Marking all contain some discussion bearing not only on the teaching of Economics but on much college teaching in other subjects. We have tried always to keep to our basis of fact, if not in the form of quantitative summaries, at least in the form of analyses of actual records; but we have not narrowed the discussion to the teaching of Economics when no distinction could properly be made between the teaching of that subject and the teaching of others.

Many specific recommendations we did not expect to make. An educational policy must be determined by those who have the entire body of facts in mind, and one important class of facts we were not, and could not be, in a position fully to master — the facts, namely, of Economics as a subject. Aims and methods in the teaching of any subject must be conceived in the light of socially and individually desirable results in the lives of the students, and in the light of the opportunities offered and the limitations imposed by conditions, including the characteristics of the students themselves, their stage of advancement, and their own purposes, and including also the values inherent in the subject as an educational instrument. These last we know only as laymen know them: and our conclusions and recommendations are accordingly tentative, with whatever finality they may be expressed. They are subject to revision in the light of expert knowledge of Economics, being valid in their present form only so far as reasoning competent to the general educator can establish them.

III. Working Plan

The Plan approved at the conference of October 29, 1913, was very useful, as a basis, throughout the Inspection, but it was avowedly provisional and we had to depart from it in a number of points as the work progressed. Its arrangement shows, however, our general conception of the task, and its headings are therefore reproduced below. The Report does not follow the headings of the Plan because the material as it came in proved even more extensive than we anticipated and because it took shape more conveniently under other headings. The Report contains data or discussion, however, on all the questions formulated in the Plan.

Preliminary list of questions for use in the Economics Inspection, October 29, 1913

A. Curricula and Student Achievement

1. What curricula do students pursue?
   (*a*) Economics A only
   (*b*) Economics A and Middle Group courses, etc.
2. What grades do students earn in the several courses?
3. What growth do students show in ability to deal with economic problems?
   This point called for the construction of a "fundamental test." (See below, Ch. 4, § IV)

B. Factors in the Choice of Curricula and in Student Achievement

I. Selection of Courses.

1. What are the students' aims?
2. What guidance does the Department give them?

II. Grades.

1. What is the Department's standard of grading?
2. What is the relation between the students' ages and their class in college and the grades they earn in this Department?
3. What is the correlation of grades in Economics and grades in History? Government? Other subjects?

III. Methods.

1. What are the advantages of inductive presentation in the teaching of Economics?
2. What are the advantages and possibilities of laboratory and field work of a constructive kind?
3. What are the possibilities of direct control by instructors of the study devoted to material to be memorized by students?

IV. Aims.

1. What aims have the members of the Department now in view for undergraduate instruction in Economics?
2. What are the special aims of the instructors in their several courses?

Two important parts of the Plan we could not carry beyond their initial stages — the construction and use of a "fundamental test" for the measurement of growth in general ability to deal with economic problems, and the conduct of controlled experiments in method. Our proposals in both cases are discussed in Chapter IV. In neither case was the difficulty inherent in the nature of the undertaking. With the coöperation of Professor Day we made good beginnings in both. But it was impossible to continue, because nobody concerned could give these tasks the necessary time. Although we had hoped to deal first, by test and experiment, with student achievement in Economics, and later, in view of the results obtained, inquire into aims, methods, and marking, we found it imperative to go ahead with the statistical studies, the analysis of statements of aim, visits to classes, and the questionnaires to students. Under other circumstances, however, the difficulties we encountered could be fully obviated by relieving investigators and staff of other burdens in favor of this work. We still believe in the possibility and in the value of controlled experiment in college teaching and of the attempt to measure its results — at least in some subjects — by means of a fundamental test. A funda-

mental test, as is elsewhere pointed out, cannot take the place of a course examination; but as a means of educational investigation it is worth taking much pains to devise and apply. Experiments yielding quantitative returns can be carried on without material injustice to the students involved and with great promise of benefit to their successors. Without these means of securing information about our work, we must still rely on data far less convincing, such as replies to questionnaires, or else on conjecture, opinion, and uncorroborated conclusions from experience.

IV. Suggestions for Further Study

One of the supplements to this Report consists of a list of questions and problems which was formulated early in the course of the Inspection and from which the Plan just discussed was derived. Most of the inquiries proposed in the list have been made, in one way or another; but in two of the main fields of inquiry there defined — as to the Staff and as to Costs — we did not feel prepared to secure the necessary data, and in some others our data must be supplemented before sound conclusions can be established. We would therefore suggest to the Department further studies under the headings given in this section, below. Other suggestions for study are contained here and there in the Report, in addition to general recommendations of policy or procedure. We would also recommend that the Department conduct experiments and inquiries to complete those reported (whether as merely attempted or as partly carried out) in Chapter IV — the experiments in Method and the project of a Fundamental Test; and further, that in Economics A and if possible in other courses, studies of marking be made similar to the one reported in Chapter VII. It would be worth while, besides, to follow up the questionnaire to students with specific inquiries to selected men, especially as to

the vocational use to which they have since been able to put their knowledge of Economics.

The fields in which we would suggest new studies are:

1. The scope, organization, and departmental regulation of the instruction, both in Economics as a whole and in its several branches.

   A study of the courses given in other universities would be a natural starting point for inquiry under this head. The inquiry ought to be broad enough to include the problem of the relation between Economics and Sociology and between Economics and Social Ethics. Important special studies might be made of the fields covered by the several courses — their relationships to each other and to various forms of activity outside of college. The suggestion, made by the Department Committee on Courses of Instruction, that a uniform system of keeping lecture notes be adopted, might well be considered further, and broadened to cover the system of assigning reading and thesis subjects, recording written work, and providing source material and opportunities for field work. The practicability of crediting in certain courses active work during the summer months — investigations, apprenticeship in banks, corporations, or railroads, government service, or service in philanthropic institutions — deserves careful study. Might not a solid piece of field work in the summer after the Junior year be reasonably accepted in place of the special Divisional examination, or of part of it?

   Comparison might profitably be made between the Department of Economics and other departments in the College: as to the number of courses offered, the instructors employed, the students taught, concentrations and degrees with distinction, doctorate examinations, standards of grading.

2. The staff — distribution of work among the members of the Department; the time spent in writing and research, committee work, public service, and teaching outside the College; distribution of graduate and undergraduate teaching; criteria for judging the efficiency of instruction; practicable methods of inspection.

3. Costs — equipment and resources; teaching; publications.

   A study of costs would involve a study of the size of classes and the per pupil expenditure for various courses, especially

for undergraduate instruction as compared with graduate instruction.

4. Causes of failure and poor work, especially in advanced courses.

A full study of the cases of D and E men, especially of their success in other courses and in after life, might lead to interesting conclusions concerning the possibility of meeting individual needs in college teaching and especially concerning the opportunities for advice and guidance in the choice of courses in college and of vocations afterward. Causes of success in college work might be studied in similar fashion.

V. General Impressions from the Inspection

The Inspection was undertaken without prepossessions, and this Report has not been written to support any preconceived educational policy; nor does it contain any section advancing detailed proposals for "reform." For reasons already given, we must present our conclusions and suggestions with the expectation that they may be modified or reversed by those who have intimate knowledge, outside the scope of our inquiry, of an important aspect of these problems. Yet a few outstanding features of the whole body of data we have studied may be characterized in general terms with some hope of profit. They are veins, metaphorically speaking, which run through the statistics, lists, and analyses of the Report. In some places they are less prominent than in others, but to one who has dissected the whole mass they stand out with undeniable clearness.

These features are undoubtedly as characteristic of college instruction in general as of instruction in Economics. They imply tendencies in college teaching which spring from the situation in which the college teacher finds himself. In part they are due to tradition, in part to more concrete causes, such as lack of funds, in part to difficulties inherent in teaching men of college age.

College teaching tends to present all subjects from a

scientific point of view: it is likely to be academic — and the teaching of Economics escapes neither the advantages nor the disadvantages of this tendency. It expounds to inexperienced young men theories and masses of information before they have become acquainted in any personal way with the elementary facts, processes, and situations with which the subject deals. It requires a great deal of listening and reading, and very little observation, practical judgment, or active decision. Its issues are not significant at the moment: they induce effort to make them clear only for the immediate purpose of passing examinations or presenting good theses. The teaching brings students into touch with the activities of the world too seldom or too partially to permit them to relate what they are studying to what men are doing. Students find it hard not to make college study a game, in which they may legitimately apply themselves to getting marks by studying books, examinations, and their professors, at the expense of a vital knowledge of the subject. Progress here certainly does not lie in the abandonment of marks, lectures, reading, section meetings, and the rest of our common machinery, but in the persistent effort to sharpen issues, awaken thought, and induce vigorous mental reaction by every means at our disposal, especially by utilizing every opportunity to bring students face to face with the subject as an aspect of life in the concrete.

College teaching, at least in America, tends to be disconnected: it is conducted by units which are not natural divisions of interest and activity in life, but are fenced off from one another for pedagogical purposes. This tendency the Division of History, Government, and Economics is already vigorously combating through its recent adoption of Divisional examinations and Tutorial instruction. But even the new scheme runs the risk of remaining artificial if

the schedules it involves are made without clear reference to the purposes of the students who elect to follow them — without reference, that is, to the legitimate outcome of any schedule in practical activity or further study. Specialization in college ought to have some point. If the old elective system made the mistake of permitting college boys to patch their curricula together as whim or convenience might dictate, the new system may fall into the error of assuming or forcing in every student a scholarly bent or interest which he does not possess and cannot develop. College teaching ought to be catholic enough to admit among the considerations on which specialization may be based such practical purposes as intention to enter diplomatic service, medicine, military service, journalism, business, or any other career. What preparation, immediate or remote, any given course affords for any given occupation is a matter for investigation or for special adjustment of the course; but it is injurious to insist that concentration shall be determined solely by the artificial distinctions between subjects and fields for distinction, while the ambitions of students and the practical possibilities of curricula are ignored.

College teaching tempts instructors to slight the laborious detail of instruction — the minutiae of method, marking, and the administration of requirements, the tediousness of conferences, thesis reading, and the checking of results. The teaching of Economics probably suffers less from this tendency than the teaching of many other subjects; and our data suggest a general danger rather than a specific defect. The policy of departmental control and reasonable supervision already adopted by the Department is nevertheless clearly advisable; and both study and experiment with devices, methods, and policies are as clearly necessary to the establishment of more effective systems and standards in the teaching of undergraduates.

College teaching tends to miss the individual — to break the contact between teacher and pupil which makes school work effective in certain respects, as it often endangers its effectiveness in others. More money is the final solution of this problem, for more money means more teachers; but a better adjustment of the demands on individual instructors for teaching, administrative and committee work, and writing, is also needed. The policy of expecting every college teacher to produce has been beneficial to many instructors and harmful to many students. Personal contact is the heart of education, and time spent in it ought never to burden a college teacher's conscience as time wasted. Advice as to courses, curricula, future vocations, reading, general conduct; discussion of problems and questions in a course or a subject; conferences on theses, papers, and examination books, both as to content and as to form and style — these ought to be as free to students from college teachers of every rank as the resources of the college can render possible. It is clear that the Department of Economics makes due effort to fulfill its obligations in this phase of teaching, and the Tutorial plan will doubtless prove especially valuable in this very respect: but the general limitation under which all college instruction suffers because there is not time for professors to know their students as individuals, appears in this investigation as it unquestionably would in any other, and for this particular problem the Tutorial scheme cannot, in the nature of the case, offer a final solution.

Looming larger and more impressive throughout the Inspection appeared the conclusion that college teaching too often fails to *reach* the student. Obstacles and distractions of many sorts prevent educative contact between teacher and pupil. The fundamental problem in the College is the problem of individual instruction, or, if we may use a phrase so general as to cover the whole life of the under-

graduate, the problem of individual development during the college years. We find no reason to despair of the college or to favor a reorganization on the Junior-College plan; nor do we find reason to believe it impossible to solve this problem in the large, urban, university college. We see no single, simple road to a solution, but we believe that a combination of many measures, carefully related and sensibly administered, may bring us as near as is humanly possible to full success in undergraduate education. Two conditions, we are confident, are essential to any plans or efforts toward this end — a general willingness on the part of college teachers to study the problems of instruction, training, and discipline as carefully, as broadly, as intensively, and as objectively as they would study the problems of the subject they teach; and an organization of college work which will make it unnecessary for any teacher to be so overburdened by the number of his students, the variety of the subjects he teaches, administrative duties, the claims of research, or the need to do remunerative outside work, that he must neglect the individuals under his charge.

CHAPTER II

AIMS

I. Statements from Members of the Department of Economics

On August 4, 1913, the following circular letter was sent to members of the Department of Economics:

> As a part of our survey of the work of the Department of Economics we are asking each instructor in Economics to formulate for us the aims of the courses that he gives; that is to say, we would like a brief but comprehensive statement of what each instructor expects the students to get from each of his courses. Doubtless each instructor has a general aim, which is in harmony with the purpose of any instruction in Economics or is identical with it; but in addition each course also naturally represents the instructor's endeavor to realize a particular portion of the general aim or to cover some particular aspect of it. In any case, we would like to know what the instructor's purposes are. Will you kindly let us hear from you soon?

Replies to this request were received from eight instructors, and included specific statements concerning eighteen courses. The letters themselves may be secured by anyone especially interested to read them. They are not printed in this volume, in part because they were sent as personal letters without a view to publication, in part because their general tenor is presented and analyzed in the following discussion in sufficient detail to make the printing of the letters themselves unnecessary. Also, the replies are summarized in note 1, Section V, Chapter IV. The present chapter gives the results of an analysis, comparison, and general discussion of these statements of aim.

The Division of Education was of course competent to consider only the educational aspects of the statements submitted, without the least assumption of insight as to the bearing of particular courses on progress in Economics or on social issues or individual needs. The replies were so evidently careful, and so clear and comprehensive, that for this purpose no further inquiry seemed necessary.

II. The Place of Aims in College Teaching

Some of the letters state or imply that the instructor had not previously given definite form to the aims of his courses; but this fact did not result in any uncertainty of statement, for the reason, as it would seem, that the aims thus formulated were drawn from the actual practice of the instructors. They appear, in other words, to be statements of direction in the instructors' work, rather than of ideal ends, defined in the light of general educational considerations. These replies (and, it may be added, the drift of testimony from the questionnaires and the visits) provide no evidence, therefore, of a consistent and clearly enunciated educational policy, in the light of which the aims of particular courses may be stated. This is undoubtedly a condition characteristic of college instruction in almost every field.

The common and heretofore possibly the wholesome tendency of American college instructors is to attack their courses first from the standpoint of the subject, and only later consciously to adjust them for use strictly as educational instruments. No teaching, however, can be completely and permanently successful, as teaching, without the recognition of definite educational objectives; and this fact suggests the importance of formulating aims, and of the discussion of aims in department meetings. Certain diversities in these very statements are probably due in part to

the fact that discussion of educational aims and values is still so unusual in departmental and faculty meetings that there is among college teachers no clear agreement as to the terms, general conceptions, or particular categories in which such discussion can best proceed. In so far as this is true, it suggests the value of making the discussion of such statements as these the order of business for a series of departmental conferences.

This suggestion is exactly in line with the noteworthy advance made by the Department of Economics in its votes separating graduate and undergraduate instruction and placing the latter under departmental control. The recent regulations concerning a general examination for students who concentrate in the Division of History, Government, and Economics look in the same direction — toward unity of educational effort. If undergraduate teaching is to be made generally effective, college instructors must submit to some limitation of individual freedom — a limitation which need not be autocratic, indeed cannot become autocratic, so long as it is effected by open discussion. In Harvard College, the control of undergraduate courses through the submission, for departmental discussion, of outlines covering aims, general methods, and requirements of reading, theses, and other work, is a policy as desirable as it is unusual. The visiting of classes by departmental committees chosen for the purpose may also be made of incalculable value to instructors. No instructor genuinely interested in the educational effects of his work will object to submitting his plans, in detail, to a department meeting, nor to subsequent visits by his colleagues and frank discussion of the entire conduct of his work.

III. Analysis of Statements by Members of the Department

The aims here under consideration may be analyzed and grouped as follows: In courses which cover many facts and principles variously interrelated, the governing aim is usually the presentation of a systematic survey of the field. This presentation is often determined by a point of view which the students are expected to acquire even if they forget much of the detail of the lectures and reading. In such courses there is also general agreement on training in assembling facts, analyzing them, and reasoning from them (e. g., Economics A, 4a, 4b, 6a, 2a, 2b, 3, 1, 5, 14, 31).[1] Courses in which a general conception is dominant find their chief purpose in the analysis and clarification of this conception and in training the students to apply it to concrete cases (e. g., Economics 8, 7, 9). Certain courses involve training in a technical method of dealing with facts (Economics 1, 9). Minor but important aims are given in certain cases: e. g., to familiarize students with the literature of the subject (Economics 11, 1, 14, 31); to present selected problems and to provide training in scientific methods of dealing with them (Economics 33, 5, 14, 31, 20e); to train in careful and critical reading (Economics 14, 31). The stimulation of public spirit is stated as a definite aim in Economics A, 4a, 6a, and 3. General moral discipline through work is given as an aim

[1] The pamphlet in which these courses are described will be sent on request by the Publication Office of the University, 2 University Hall, Cambridge, Mass. As the numbers attached to courses are sometimes changed from year to year, it is necessary to note that the numbers here given refer to courses offered in 1913–14. The general argument of the chapter is not affected, however, by such minor changes as have since been made, and all but a very few of the numbers used designate the same courses now (1917) as in 1913–14. The only substantial change in courses since 1913–14 consists in the withdrawal of Economics 9, the course in *Accounting*, and the substitution therefor of a half-course in *Accounting*, numbered 1a and designed specifically for undergraduates. Course 1, in *Statistics*, becomes 1b.

in Economics 4a, 4b, 6a, 1, and 3. To improve the written English of graduate students is given as an aim in Economics 20e.

This analysis yields the following somewhat loose correlation of aims:

1. To survey the subject for a comprehensive and systematic view of the field to be covered.
   - (*a*) To familiarize the students with the literature of the subject.
   - (*b*) To present with special care selected illustrative problems.
   - (*c*) To give the students insight into modern economic conditions and problems.
2. To train the students in methods of study and thought appropriate to the subject.
   - (*a*) To train the students to deal scientifically with concrete problems of a special sort.
   - (*b*) To train the students in a technical method which the subject involves.
   - (*c*) To train the students in the careful reading of selected books.
   - (*d*) To analyze a general conception and induce clear thinking in terms of that conception.
3. To stimulate public spirit.
4. To give general moral discipline through work.

This grouping may do violence to some of the aims as stated, and it is at best but an arrangement suggested by the statements, not contained in them; yet it is probably fairly representative of their main trends. The first group of aims centers in the idea of presenting the facts and principles in the field covered by the courses; the second, in the idea of training the students to deal effectively with those facts and principles. These two groups are correlative, and together they cover by far the greater number of the stated purposes of the courses. The third aim is mentioned or implied several times, but apparently as an aim to be realized through the general conduct of the courses rather than as a dominat-

ing purpose for which the material of the courses is organized and the methods chosen. The fourth aim is an aim common to all good college instruction. Both the third and the fourth aims depend for their realization, in any case, less on choice of materials and methods than on the personal attitude and influence of the instructor — on his power to inspire, enlighten, and guide; on his insistence on standards, fairness in marking, and ability to meet individual needs in assigning work; and on similar capacities and habits of teaching.

It may fairly be said that the statements, as a group, show a tendency to derive the purposes of instruction from the material of the courses. That is, they convey the impression that the work is organized primarily to cover the field, never, to be sure, without reference to the uses of knowledge, insight, and technical skill, but without ruling interest in the situations and relationships in which the student will find himself outside of college. The fact that the student is to be an active participant in economic life is not ignored; but the main picture of the student suggested by the statements is a picture of one whose need is first of all for systematic or scientific knowledge. There is no lack of reference to the student, nor to the qualifications he must have to be successful in the work of the courses. There is less reference to the question, What will he use his achievement in the courses *for?*

This condition might suggest a superficial arraignment of instruction in Economics as "academic," "lacking in practical application," or "unduly scientific." Many of the replies to the questionnaires, both graduate and undergraduate, would support some such treatment of the matter; but it would obviously be an easy dismissal of what is in fact a fundamental problem in college teaching.

IV. General Discussion

The problem concerns not single courses only, but the whole curriculum of the student in the given field. This is the more apparent now that the Faculty has adopted the principles of concentration and distribution; and in the Division of History, Government, and Economics, since it has established the Divisional examination, the general nature of the problem cannot but be evident. The question is, From what point of view shall those comprehensive aims be stated which are to govern the conduct of the total offering of undergraduate instruction in Economics? Aims in single courses depend on the larger purposes for which courses are organized into schedules for concentration, distribution, distinction, and, in the end, the baccalaureate degree. *Per contra*, the making of such "concentration schedules" as have recently been issued by the Division of History, Government, and Economics calls for very careful scrutiny of the aims of the courses contained in them. The problem centers, therefore, about the use of Economics for undergraduate specialization.

The statements here under discussion present no dominant standpoint and refer to no common purpose of instruction. Vocational application is in at least one statement (Economics 9) the determining consideration, as in that case it is obviously appropriate that it should be; in other cases (e. g., Economics 4a, 4b, 6a) vocational application enters to a certain degree as a factor in the formulation of the aim: but it cannot be said that the courses in Economics, as a whole, are directed toward vocations. They are not intended to be courses in Business Administration, and preparation for special careers is evidently not considered to be their function. But there is no clear indication, either, that preparation for participation in political, philanthropic, and

governmental activity is the dominant aim. The statement for Economics 4a, 4b, and 6a alone distinguishes explicitly between citizenship and vocation as objectives; although other statements (Economics 3, 7, 8, 31) mention or suggest the broader social use of knowledge as a determining factor in the formulation of the aim.

The commonest implication of the statements is that a general understanding of economic conditions and economic forces is the ultimate end to be achieved; and there are, of course, clear grounds for the defense of so inclusive (even if so indefinite) an aim. It may be said that every college graduate ought to comprehend the economic order in which he must live and work; that the undergraduate study of special aspects of Economics ought to be directed primarily toward the deepening and unifying of that comprehension; and that every undergraduate course ought therefore to be fundamentally a course in the principles of Economics. In similar fashion, it should then be argued, every undergraduate course in science ought to deepen and unify the general understanding of the natural order, and in that sense be a course in the principles of science; every course in history reveal with added fullness the general evolution of human affairs; every course in literature lead to a clearer insight into the nature of Letters; and so on. If this standpoint is in fact accepted in any given field, it connotes acceptance of a view of college education which has recently found more and more frequent expression — the conception, namely, that the final outcome of a college education should be an articulate philosophy or interpretation of life, or an approach to it, or at least a definite advantage in the attempt to achieve it.

If undergraduate instruction is to be purely cultural, some such definition of culture is essential as a basis for instruction and the administration of college curricula. Good

taste cannot be accepted as an adequate criterion of culture, nor the ability to fill one's leisure with refined enjoyment. The modern conception of culture implies insight as well, and the organization of knowledge, interests, and capacities for an intelligent reaction to the demands and opportunities of life in a civilized community. Although culture must be distinguished from usefulness, it is in itself supremely useful; but it is general, and depends on the development of no specialized capacity, no single power, no limited body of knowledge.

It was possible once to hold that intimate acquaintance with the Classics could alone enable one to "see life steadily and see it whole"; but the Classics no longer comprehend even the humanities, to say nothing of the sciences. The doctrine, subsequently advanced, that formal or general intellectual discipline, obtained from a single subject or in a single field, or from a restricted curriculum, is a possible or practicable result of a college education, has been sharply questioned, and at least in its cruder forms, disproved. (The statements of aim in Economics, it may be noted, are very nearly free from the suggestion that the student may obtain a discipline of mind in that subject such as to enable him to deal easily and adequately with every other important aspect of experience.) Indeed, no single study or narrow group of studies is now considered sufficient to provide a culture comprehensive enough to result in a penetrating and well-balanced view of the modern world and the life of man. On the contrary, the dictum most often quoted is that culture demands "something of everything and everything of something," to the end that the college graduate may interpret life at once broadly and without superficiality.

This principle is undoubtedly much sounder than the principle of formal discipline, and, sensibly applied, it may effect (and in fact has already effected) very desirable re-

forms in the administration of the elective system. It does not of itself, however, counteract a somewhat marked tendency in our instruction which is generally admitted to be undesirable — the tendency to deal with undergraduate subjects from the point of view of the graduate specialist. Nor does it of itself guarantee that the courses provided for general or "distributive" purposes shall be sufficiently general. "Everything of something" does not mean that the undergraduate must be brought quickly to the point of view of the scientific scholar; "something of everything" does not mean that the undergraduate should be given unrelated views of many subjects, however learned the instruction. To be effective for general culture the material of every course, whether elementary or advanced, should be built into a growing understanding of the whole field within which the course lies. From the standpoint of culture, thus conceived, it cannot be assumed that undergraduate "concentration" necessitates research, or that undergraduate "distribution" is satisfactory if in the study of any subject in any "group" the student may escape without a general and related view of the courses he selects. If, therefore, this general aim of college instruction is to be accepted and worked out to its logical conclusions, undergraduate courses in any field ought, it would seem, to be organically related so as to strengthen and deepen the student's general grasp of that field, and instruction in every course ought to be in some measure broadly interpretative of the whole subject; furthermore, in every "group," schedules of related general courses for "distributive" use ought to be arranged, and the instruction in those courses ought to include some effort to reveal the relations of the departments of knowledge in that group and of that group to other groups. The statements of aim in the Economics courses do not show the results of concerted effort to work out in this or in some other way the

cultural purpose on which they seem to be based, although the new requirements for concentration in the Division of History, Government, and Economics, and the requirements for the several degrees with distinction in this division are important steps toward that end.

In Economics itself, however, it may be supposed that the purely cultural aim cannot be strictly adhered to, at least in courses designed chiefly for concentration. Departure from that aim is in fact indicated in the vocational reference of several of the statements and in the fact that direct social applications of a decidedly practical character are also often in view. Indeed, these statements (and a glance at the titles of Economics courses in the Elective Pamphlet) bring home the conviction that the purely cultural aim is too indefinite to be accepted as the complete and sufficient purpose of a college education in which such a subject as Economics is to have any considerable part. Instruction in Economics for purely cultural purposes cannot, it would seem, be adequate, even for undergraduate ends, in a university college. Direct preparation both for vocation and for general social service would appear also properly to enter as a factor in the aims of instruction.

This statement has no reference to the obvious desirability of relating instruction in Economics to actual economic problems, simply as a matter of method. Many of the replies to the questionnaires show that such reference is desirable, although not always attempted. It is a principle of teaching now generally accepted that, other things equal, the best way to begin the teaching of any subject is to bring the student face to face with concrete problems which cannot be satisfactorily solved except through study of that subject. Continuous touch with the concrete is, furthermore, an advantage in learning which is usually worth great pains to secure. But direct preparation for dealing with practical

problems demands more than this. The use of preliminary problems in the section meetings of Economics A has aroused interest, engendered a new motive for learning, and given point to the class discussions; but it has not supplied the necessary conditions (in that course, to be sure, not requisite conditions) for practical preparation. Preparation for work of any importance or difficulty demands intensive study of actual problems of the work and a method that closely approximates (or better, that includes) practical experience. Theoretical understanding becomes merely a half-way stage in progress toward practical efficiency. In fine, vocational or other concretely applicable preparation is not merely study, but training.

The measure in which such training should be made the aim of any course, or of any part of any course, in Economics, it is not within the province of laymen in that subject to discuss. By what methods, in what courses, and under what conditions practical aims shall be realized in actual instruction only the expert in the field can determine. The sole point here in question is recognition of the students' practical purposes and the effort to satisfy them in such ways as are appropriate and possible. At present no statements of aim and no announcements of courses even imply their existence, much less describe methods designed to meet them. The layman can only suggest that use of such methods is desirable, on general educational grounds, for most students who make Economics their major study. For specialization in this field cannot commonly be considered complete without it; and specialization in college particularly demands it, since college concentration is usually undertaken not for the purpose of preparing to teach, but rather for participation in the affairs of government, philanthropy, or business. Even the prospective Ph.D. ought, it may be supposed, to have some directly practical training; but the prospective Ph.D.

is but one in twenty [1] of those who concentrate in Economics. The rest are to be workers in other fields. Their education in Economics would seem to be incomplete unless it leads to the beginnings of practical power in addition to general understanding.

It may be said that the Business School is the place in which such power should be developed; and the general principle may be advanced that all vocational and other practical training should be graduate training, undergraduate concentration being reserved wholly for intensive study under purely cultural ideals, or for the purposes of pure scholarship. (The fact that only a few college men can afford Business School training does not affect the fundamental question, although it may long have administrative importance.) But complete preparation for a professional career may readily be assigned to graduate schools, yet the permanent question here at issue remain undecided. For there are reasons for doubting the wisdom of a policy which makes pure scholarship the dominant aim of college concentration in every field and for every student. Concentration in such a subject as Comparative Literature favors, if it does not actually necessitate, the ideal of pure scholarship; but in Economics, as in other social sciences, the underlying reference is so intensely practical that a curriculum of six courses without the saving element of practical training must often make for remoteness and unreality. The desire to take part in the work of the world is strong in normal college men. To be sure, a decided intellectual interest may in many cases be a better basis for concentration than a weak or vague vocational or social purpose; in

[1] Based on actual count of Harvard graduates returning for advanced study in Economics. Of 460 Harvard undergraduates concentrating in Economics during the period 1913–17 not one has finally received his Ph.D. in Economics from Harvard University, although 16 have undertaken some graduate work and a few more will doubtless do so next year (1917–18).

other cases the impulse toward participation in active life may be satisfied by student enterprises, concentration serving to engage such purely scholarly interest as the student may have or acquire; and possibly concentration in Economics may thus in some cases be made to minister to purely scholarly interest, or to feed a specific intellectual appetite: but it would seem safer to admit that its natural relation is with practical purposes, vocational or social. The choice of this field commonly means that the student intends to attack economic problems as a part of his life work, either in his vocation or in other social activities. If he has no such intention, it may be doubted that he is acting wisely to specialize in so practical a science; his specialization, in that case, ought at any rate to be determined with care. If his intention is clear, or becomes so, his specialization, it may be contended, ought to include, perhaps to culminate in, direct practical training.

This argument is based on the conviction that a college education which results in culture alone — that general understanding of life which makes leisure significant and holds all interests and activities in balance — is for many students inadequate, perhaps indeed impossible: it seeks to justify actual preparation for specific duties and obligations as an important element in many college curricula. But it does not support the claim that the college should train for professions, or that every student should be forced to choose one course which gives direct training for special activities. Its immediate object is to present the importance of vocational and other strictly practical aims in some parts of college instruction in Economics, especially in some of the courses that are meant primarily for concentration. Whether any changes in the instruction now offered, and what changes, the acceptance of this conclusion would involve, the Division of Education is naturally quite incompetent to con-

sider: the question here at issue, although it involves the problem of adopting methods of practical training, is in itself solely a question of aims. It is a question, however, not only of aims in any particular course, but even more largely of aims in planning student curricula, and specifically, curricula for concentration.

Concentration is, indeed, the rock in the way of accepting pure culture as an organizing principle in the teaching of Economics. It is easy to see that Economics A, as an introductory survey of the subject, chosen in large part by men who do not intend to concentrate in Economics, may well take but little account of specific vocational or other practical purposes. However necessary it may be to consider such purposes in organizing sections and directing students' work, the instruction itself must doubtless be occupied with the task of presenting contemporary economic organization and its major problems for the sake of determining attitudes, training students to think in economic terms, and clarifying the relation of Economics to other fields. Economic history must obviously be taught from a similar point of view. Perhaps this point of view is essential in other courses. The course in Accounting seems to be the only course in which it would seem clear, even to the layman, that the cultural purpose would be wholly out of keeping and practical training the only natural character of the work. The only generalization the layman may safely venture is that the intentions of the students admitted to the course — and hence, fundamentally, the student purposes the course is designed to serve — should be the determining factor in the definition of its aims and accordingly in the assignment of its place in student curricula. (The intentions of students cannot be accepted, to be sure, in the crude and half-formed state in which students themselves often hold them: the purposes of youth need modification and reformulation if

they are to be taken into account in providing courses; yet they must still remain our chief reliance in the organization of curricula.) In courses chosen for distribution or intended to serve as beginnings in concentration, the cultural aim may be appropriately dominant, and methods need approach those of practical training only in so far as good teaching demands it and conditions permit. In some courses designed for concentration (e. g., the middle-group course in Economic Theory) the cultural purpose is apparently prescribed by the subject. To what extent vocational and other practical aims may be kept in view in other courses for concentration would seem to depend on the factor mentioned — the purposes (properly interpreted) of the students admitted to the course.

Among these purposes vocational and social-service aims are surely of great importance. If they exist, they ought to be known; if they do not exist, the student's curriculum of concentration ought to be affected by that fact. To urge a student to ignore them or thrust them aside in choosing his concentration would seem to be justifiable only if he has also a strong scholarly taste or interest and can serve his practical purpose by a "minor concentration" in his "free" courses. The problem is at bottom a problem of educational guidance. The aims of courses ought to be stated in terms of effort to meet the needs of students; descriptions of courses framed with explicit understanding as to the student purposes the courses are intended to serve; instruction guided by full possession of all available data as to students' outlook, interests, and intentions.

The Division of Education recognizes the fact that the new schedules for concentration in Economics may well have been framed according to principles determined after full consideration (perhaps, of course, consideration resulting in views adverse to those here expressed) of the issues

presented in this chapter. The chapter is written without other data in view than those submitted in the statements of aim and those supplied by the pamphlets and communications of the Department. If any part of it offers suggestion for profitable discussion by the Department, the fact that the rest is inapplicable will be of small moment.

Supplementary Note

This chapter inevitably suggests the whole problem of undergraduate training for the professions and the meaning of the bachelor's degree. In its present solution of this problem the University has adopted a policy in many respects liberal: no single subject (except for a fundamental course in English) is required for the degree, and no distinction exists between the A.B. and the S.B., except the requirement of admission Latin of candidates for the degree in Arts. The required English course may be "anticipated" in the admission examinations, and it is not impossible that the argument for a single bachelor's degree (the A.B.), without reference to Latin, may eventually prevail; so that in time any student may secure the baccalaureate degree in Harvard College on a course defined, from entrance to secondary school through the period of undergraduate training, only by broad rules for the selection and organization of studies. In one respect, however, the University has been more conservative as to the bachelor's degree than many other American institutions: it has refused to count toward the degree any professional courses. The most notable present exception to this rule is the counting of a few strictly professional courses for teachers — e.g., Education 9, the course for supervised practice in class-room instruction; and it is now proposed that a Graduate School of Education shall be established to take over as soon as possible all work in this field.

The ideal of a non-professional undergraduate course is clear, and the Division of Education desires to take no stand against it. It is undoubtedly advisable for many institutions to begin professional training with the junior year in college or even earlier; but it would seem equally advisable for some to maintain the full course of liberal studies for the A.B., without admixture of strictly professional work. For those who can afford the time — it has been amply proved that entrance to college a year or even two years before the common age of entrance is both safe and advantageous — the full "liberal" course in arts provides a highly desirable opportunity for the maturing of

general interests, attitudes, and views, for adventure in scholarship, and for the definition of practical and social purposes. It is only for this last phase of the whole opportunity we would here contend. College work in subjects with a practical trend and outlook ought finally, even in Harvard, to take for many students a practical turn, — which means, not that the student should be brought suddenly under the full control of vocational ideals, as if he had entered a professional school, or that vocational training be made the major aim of his upper-class courses, but that his vocational purpose be recognized in his choice of courses and schedules, and the practical usefulness of certain parts of his instruction frankly avowed. After certain general courses, taught for purely cultural purposes, should come schedules of courses leading toward entrance into the purely professional work of the graduate schools or bearing on the work of the occupation itself. Concentration according to such schedules should be permitted as freely as concentration in a single subject or a set of academically related subjects, on the basis of scholarly interest. The courses need not be technical, narrowly "practical," or in any way prematurely "professional": but their relation to each other in the concentration schedule should be openly determined by the vocational objective on which they all bear. It is the frank avowal of the vocational aim of certain combinations of courses that is important. The courses themselves may deal with matters more or less remote from the occupation in view, provided that in combination they afford a suitable preparation for truly vocational study, and are so advertised. The extent to which any given course shall include training of a strictly practical character is in any case a matter for adjustment in each course; but this plan necessitates no particular amount of practical work at any prescribed point.

Indeed, this plan offers a means of maintaining the generally "liberal" character of the baccalaureate curriculum, with all its advantages. It does not force the choice of a profession. It does not hamper the teacher of every upper-class course by prescribing for his instruction a vocational outcome. But it does permit students whose vocational purposes are already defined to shape their work in accordance with their intentions. It fosters in others, but not unduly, the tendency to define such purposes. It should prevent waste of effort and simplify the problem of the adviser.

Professor Day suggests that in Economics the necessary guidance should be given by the Tutors. This is doubtless desirable, and in making the connections between courses the Tutors can do much service by clarifying the relation between the study of college Eco-

nomics and the work to which individual students may be looking forward. It will still be necessary, however, to establish and publish sequences of courses, and to state in the Department pamphlet the bearing of courses on preparation for vocations or on vocational training in a graduate school. And outside the field of Economics, schedules of other courses — e.g., courses preparatory to the study of medicine — ought to be established as approved schedules for concentration.

In such schedules continuity of intellectual effort and unity of outlook must, of course, be safeguarded: a schedule that is merely a hodge-podge of unrelated courses would be at least subject to suspicion, even if it could be justified on the ground of vocational intent. Some present concentrations, however, lack unity, or at least seem to lack it, if one considers only the names of courses; and experience with concentrations in Mathematics and Education (permitted because there is a field of that name, in which one may be a candidate for the degree with distinction) shows that a vocational purpose *can* hold together studies which differ considerably in content.

This chapter is essentially an argument for giving up academic distinctions and catalogue divisions as a basis for determining curricula, and turning to the realities the rules are meant to serve — the purposes and interests of students and the fields of endeavor and interpretation in life.

CHAPTER III

QUANTITATIVE STUDIES FROM STUDENTS' RECORDS — STUDIES IN CORRELATION

I. Economics and Other Subjects — Trend of Student Elections

An attempt is made in this section of the Report to determine, in general, what kind of students pursue courses in the Department of Economics.

In the first place, the scholastic interests of the students concerned, — in so far as they are indicated by the election of courses outside of the Department, — have been studied. There is an impression that the students who do the best work in the Department show a distinctly scientific and mathematical bent. This opinion, however, is not borne out by their election of courses.

The choice of studies in the case of a thousand students of the Department was first canvassed. These students had taken on the average between three and four half-courses in Economics. The courses taken outside the Department were classified for the purposes of this study into three groups: (1) History, Government, Education, Philosophy, Psychology, Social Ethics, Music, History of Religion, and Fine Arts; (2) English, Comparative Literature, German, French, Latin, Greek, Italian; (3) Mathematics, Geology, Physics, Chemistry, Astronomy, Engineering, Physiology, Anatomy, Zoölogy, Botany, and Mining.

Among the one thousand records, there were thirty-five which showed the election of twelve or more half-courses in

the Department. This number of courses would seem to be sufficient evidence of specialization in Economics. The elections of these students outside the Department are shown in the following table, classified according to the above mentioned groups:

TABLE I

Student	I	II	III	Total	Tendency
1	9	9	..	18	I–II
2	12	6	4	22	I
3	10	9	8	27	I–II–III
4	11	9	4	24	I–II
5	10	7	2	19	I
6	10	8	5	23	I–II
7	8	8	5	21	I–II
8	5	8	..	13	II
9	11	5	1	17	I
10	10	6	..	16	I
11	6	11	..	17	II
12	2	15	..	17	II
13	2	6	10	18	III
14	7	6	..	13	I–II
15	8	5	5	18	I
16	11	2	1	14	I
17	7	6	10	23	III
18	9	2	3	14	I
19	13	8	6	27	I
20	10	7	4	21	I
21	14	12	2	28	I–II
22	6	11	..	17	II
23	7	8	4	19	I–II
24	7	10	10	27	II–III
25	12	3	1	16	I
26	2	14	2	18	II
27	10	..	6	16	I
28	11	11	4	26	I–II
29	6	8	6	20	I–II–III
30	1	12	4	17	II
31	21	5	2	28	I
32	11	6	6	23	I
33	11	5	4	20	I
34	14	16	1	31	I–II
35	9	7	..	16	I–II

Explanation of Table I: To show the field in which a student's work lay, the record for each student was classified according to the number of half-

courses taken. This was done in the following way: if the total number of half-courses was less than twenty, the number in the maximum group must be greater than the sum of the other two, in order to be considered as sufficient evidence of concentration. If the total number of half-courses was over twenty, there must be a plurality of at least three half-courses. If there was not a plurality of at least three half-courses, the groups were combined.

TABLE II

(Table II is a summary of the result of Table I)

Group	
I	14
II	6
III	2
I–II	10
I–II–III	2
II–III	1
	35

Explanation of Table II: This means that of those students who took twelve half-courses in Economics, fourteen, or 40 per cent, were interested decidedly in what are termed purely cultural subjects; six, or 17 per cent, specialized in language; and only two, or 5 per cent, were students of the mathematical and "scientific" subjects. Ten, or 29 per cent, were students who took the orthodox college course of language and cultural subjects; two, or 5 per cent, had an evenly distributed course. The group which combined I and II was clearly inclined away from the scientific side, towards the established academic course. Therefore, if we add groups I and I — II (14 + 10 = 24) we find that 68 per cent of the students were not especially interested in the subjects of the third group. Further, if we distribute the six students of Group II on the basis of their inclination towards I or III, we find that four took no courses in Group III and are concerned only with I and II; that one has two courses in each of II and III; and one is in favor of III. We may therefore add these four (24 + 4 = 28) which would indicate that about 80 per cent of the students in question are chiefly interested in the studies of Groups I and II.

The cards of all the students of the Department between the years 1904–05 and 1912–13 were then classified on the basis of specialization in one or the other of the three groups. Only students, in the first place, who had taken two or more courses in Economics; and, in the second place, only those who by electing eight or more half-courses in one of the above groups gave evidence of some specialization in these various groups, were considered. Of the eight hundred and ninety-

nine records thus selected, one hundred and fifty-six fell in Group I; five hundred and twenty-two in Group II; and two hundred and twenty-one in Group III.

Table III shows the grades which these men received in Economics.

TABLE III

	I	II	III
A	26	35	28
B	54	114	43
C	52	253	105
D	19	103	40
E	3	17	5
Totals	154	522	221
Per Cents of Whole Group	17	58	25

Table IV gives the same facts reduced to percentages, e. g., 17 per cent of Group I received A in Economics as compared with 7 per cent of Group II and 13 per cent of Group III. Taking the grades A and B together, 52 per cent of Group I receive superior grades in Economics; 29 per cent of Group II; and 33 per cent of Group III.

TABLE IV

	I	II	III
A	17%	7%	13%
B	35	22	20
C	33	49	48
D	12	20	18
E	2	3	2

Conclusions: A study of the records of the elections of approximately nine hundred students of the Economics Department shows that about three-fifths (58 per cent) of the students concentrated in their work outside of the Department in the language group of studies. About one-fourth concentrated in Mathematics and Science, and less than a fifth (17 per cent) in a group of studies including History, Government, Philosophy, and Fine Arts. The students, however, who concentrated in this last group of studies (Group I) received superior grades (i. e., A or B) in their courses in

Economics in about a fifth more of the cases than did the students who were classified in either of the other groups. There is no reason to believe that Economics has any natural affiliation with mathematics and science or that interest in mathematics and science promises well for success in Economics.

II. Distribution of Grades in Courses in Economics and in Sections of Course A

In the following table, the grades given to thirty-eight hundred and sixty-three students in Economics A are shown, and secondly, the grades received by eight hundred and ninety individuals in the more advanced courses in the Department. These eight hundred and ninety individuals had each taken six or more half-courses beyond Economics A. For purposes of comparison the grades have been reduced to percentages and their distribution shown in Plate I.

TABLE V

Distributions of Grades in Economics A and in Advanced Courses

	A	B	C	D	E	Totals
Economics A	364	987	1874	523	115	3863
Per Cent in Economics A . .	9	26	49	14	3	....
Advanced Courses	603	2041	3398	718	164	6924
Per Cent in Advanced Courses	9	30	49	10	2	....

The grading, as the table and chart show, is somewhat higher in the advanced courses. The smaller number of the E and D grade students electing advanced courses is sufficient to account for this difference. It is to be noted, further, that the distributions are not symmetrical, there being a somewhat larger proportion of A and B grades given than of D and E grades.

Uniformity of marking on the part of the individual instructors in the Department would doubtless be promoted by giving some attention to the general practice of the De-

partment, as shown in these distributions. This statement should not be construed as meaning that the marks assigned by an instructor to a small group of students should necessarily even approximate to these distributions. Quite the contrary: It would seldom happen that an instructor's "sampling" of the student body, in the case of any one class, would be an exactly average "sampling," — which is what would be indicated were he to distribute his marks according to the percentages given above. But in the course of several years the grades in his various classes or sections should, when totaled, approximate the above distribution, unless, to be sure, there were exceptional factors, e. g., election of the course by a superior grade of students only.[1] These more general questions are discussed in the chapter on Marking.

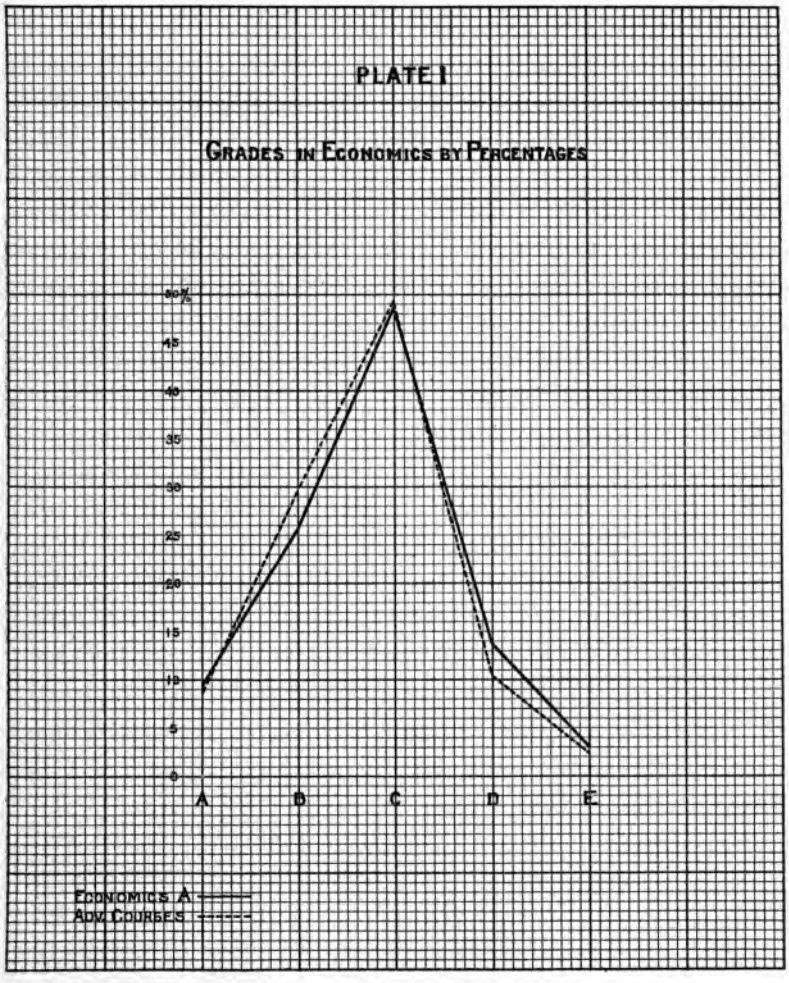
The above distributions represent the average results of the marking of the instructors of the Department. Instead of reconciling differences in standards by striking an average, it would doubtless be better to set up a standard upon which several of the instructors already agree, — if a Department is fortunate enough to have such agreement and provided there is a reasonable basis for the agreement. For the present, however, it may be sufficient to take the above distributions as representing the general standard of the Department of Economics.

The question of the uniformity of grading in the Department has been studied more specifically in the case of the section grading in Economics A. These sections are, in the first instance, formed without reference to the quality of students, so that in the course of a few years, at any rate, each instructor should have secured about the same pro-

[1] In an unpublished study of marking in Harvard courses A. J. Inglis has shown that even a standard distribution based on the combination of marks in large introductory courses cannot safely be used as a basis for distributions in upper class courses.

PLATE I

GRADES IN ECONOMICS BY PERCENTAGES



portion of the various grades of students, and if his assignment of grades differs much from the general practice, it must be accounted for in other ways, e. g., marked superiority or inferiority of instruction, — matters which then may reasonably be inquired into.

The grades given in the several sections of Economics A during the years 1913–14 and 1914–15, including both mid-year and final marks, have been tabulated. The results are shown in the following tables of percentages and in the accompanying charts (Plates II to VI inclusive).[1]

TABLE VI

PERCENTAGES OF GRADES ASSIGNED IN SECTIONS OF ECONOMICS A DURING THE YEARS 1913–1914 AND 1914–1915

	Mid-years					Finals				
	A	B	C	D	E	A	B	C	D	E
Instructor A .	.5	17	43	33	6	.1	29	57	12	1
" B .	2	15	35	39	9	0	21	51	24	4
" C .	3	13	42	37	5	4	24	44	24	4
" D .	3	20	45	25	7	.5	21	51	24	4

As may be best seen from the charts, there is a much greater diversity of practice than can be accounted for on the basis of differences in the quality of students in the various sections. Furthermore, only in the case of one instructor (D) is there agreement between the proportions of grades assigned at the mid-years and at the finals. In general, there is a larger proportion of low grades given at the mid-years. This is due in part to the dropping out of the poorer students after the mid-years, in part to an actual improvement in the performance of the students who remain. The employment of a standard at the mid-years more severe than the standard employed at the finals could have no justifica-

[1] At mid-years, an AA section, so-called, is formed by selecting those doing A-grade of work in the various sections. The marks for these sections are included only in the combined distribution of the final marks as shown in Plate VI.

tion except in a dangerous theory of marking for "moral" effect. As the chapter on Marking points out, the only advisable course in assigning grades is to use every effort to be accurate at the time the grade is assigned.

One instructor (C) has a perfectly symmetrical distribution of grades at the finals, which differs very markedly from any of the other section distributions, and also from the general distribution of grades shown in the preceding chart. This would imply a conscious use of the "probability" distribution curve. This practice, we believe, is not justifiable. The employment of a fixed form of distribution in the case of a small group of students is bound to do injustice, since no two successive groups, except by chance of definite selection, will be the same in the proportions of the various grades of students. If any form of distribution is to be followed, that representing the practice of the Department as a whole in the marking of the total group will do least injustice.

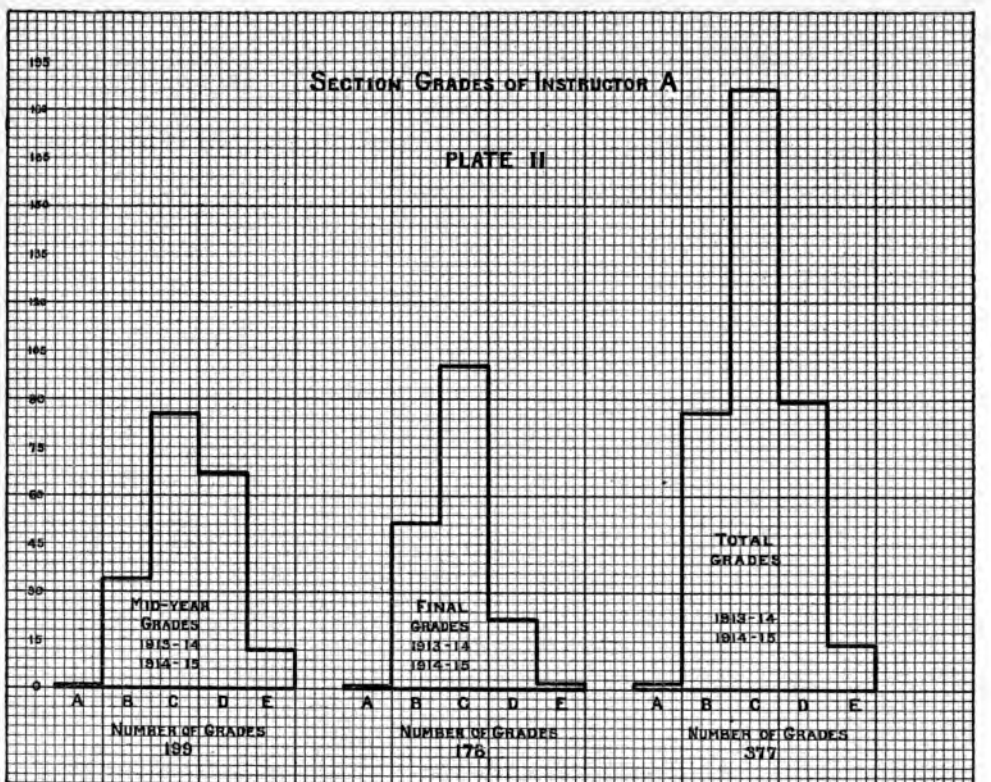
III. Elementary Courses and Advanced — Correlation of Elections and of Grades

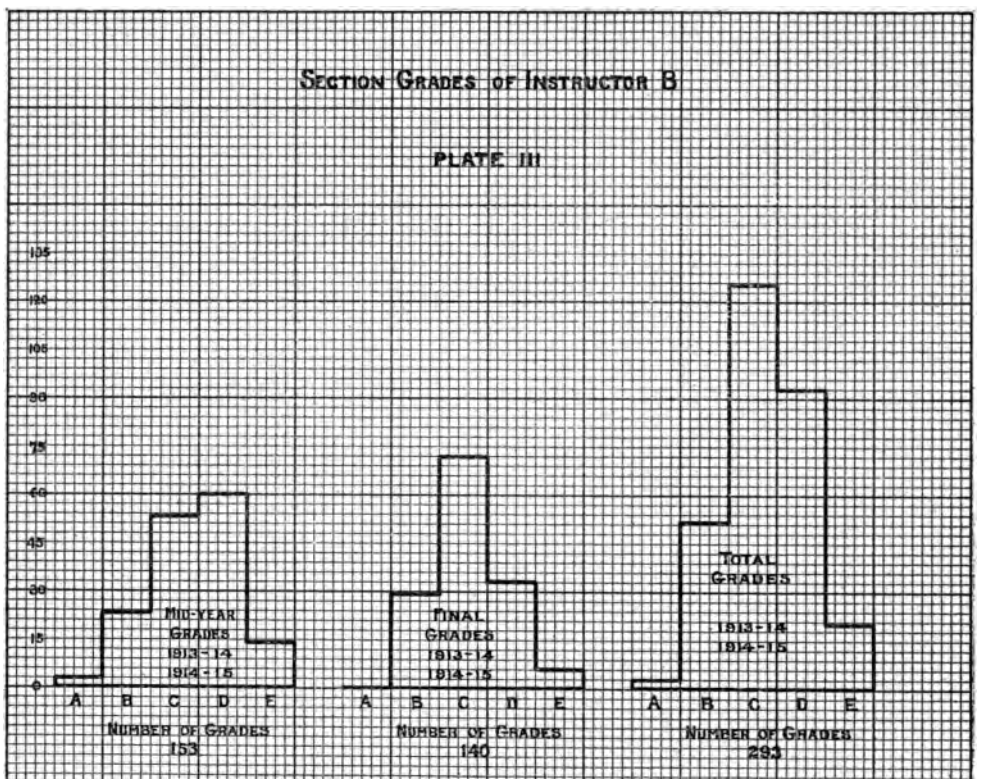
A. *The Relation of Economics A to the Advanced Courses of the Department.* Seventy-one and nine-tenths per cent of the students of Economics A elect further courses in the Department. This percentage is based on the records of 3856 students during the years covered by this investigation. The extent of further elections beyond Economics A is shown in Table VII and in Plate VII.

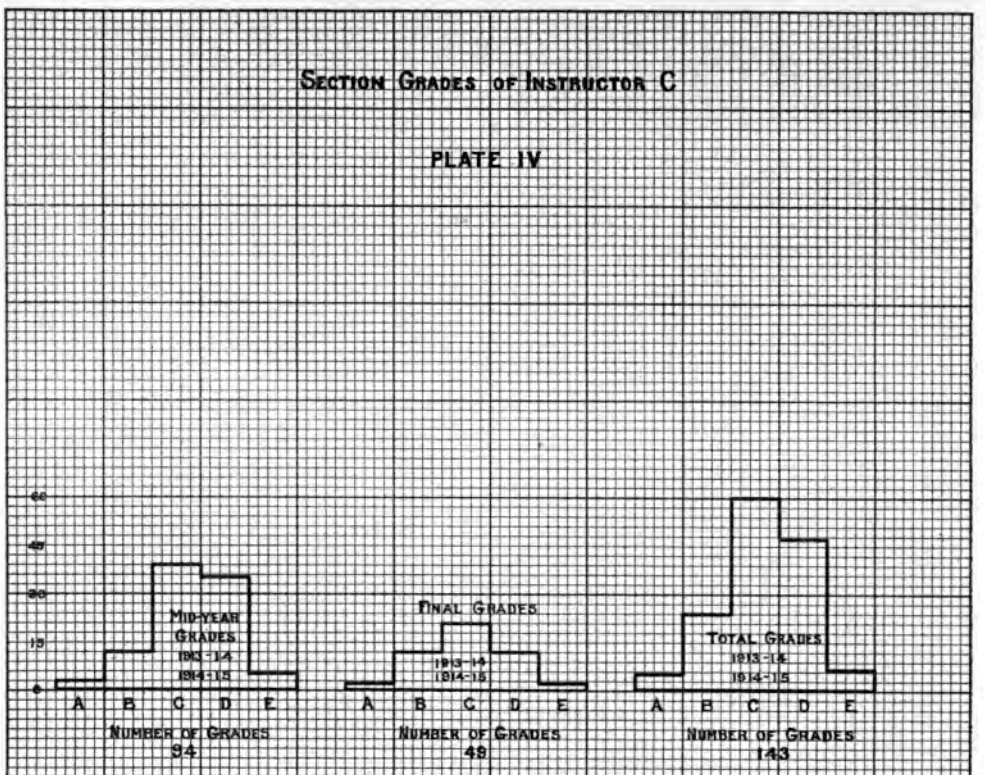
TABLE VII

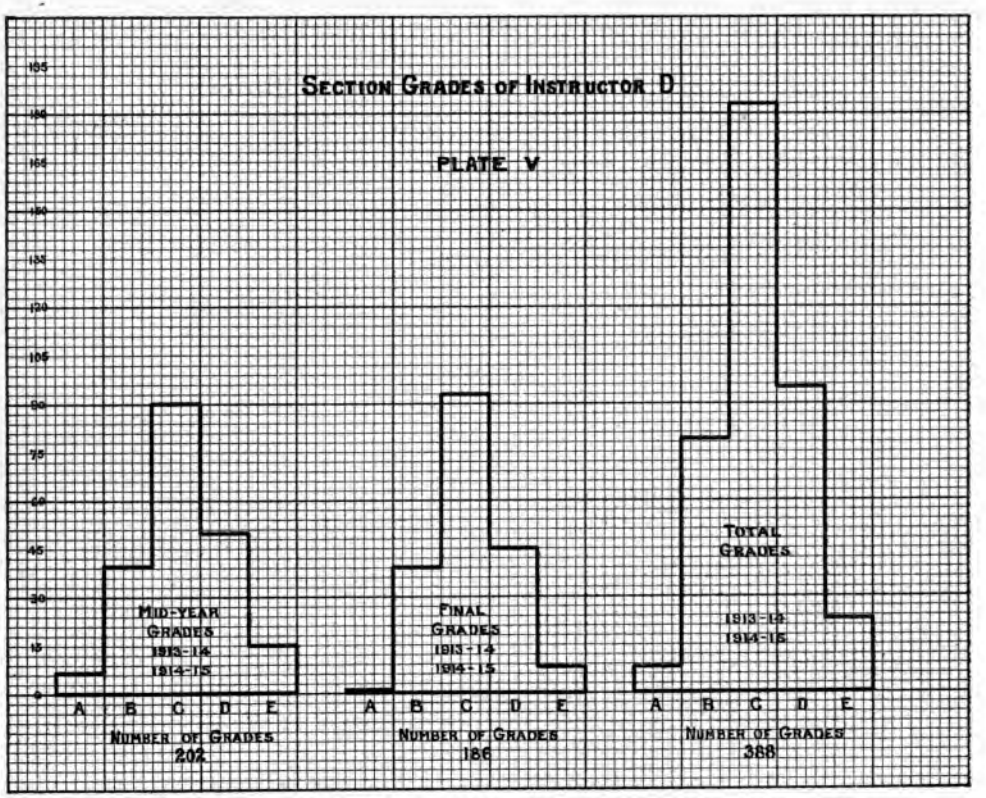
Numbers and Per Cents of Students Taking One or More Courses

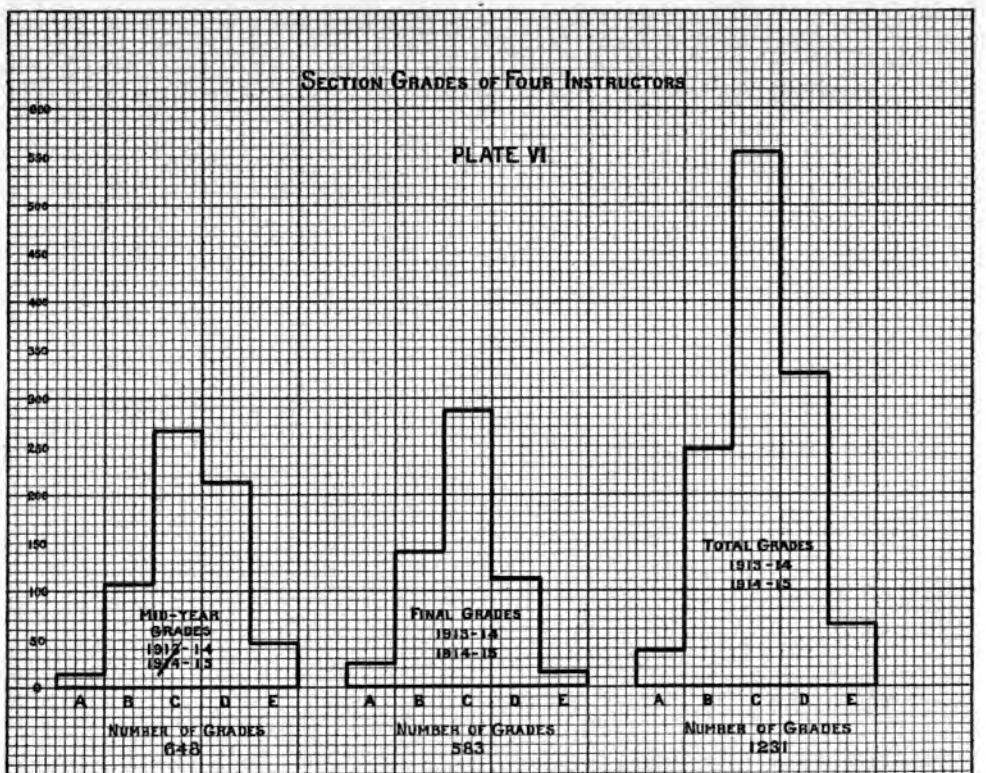
No. of Courses	1	2	3	4	5	6	7	8	9	10	11	12	13
Number .	1083	301	569	349	363	308	243	191	152	112	74	48	63
Per Cent of Students	28	8	15	9	10	8	6	5	4	3	2	1	2


SECTION GRADES OF INSTRUCTOR A
PLATE II
MID-YEAR GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 199
FINAL GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 176
TOTAL GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 377


SECTION GRADES OF INSTRUCTOR B
PLATE III
135
120
105
90
75
60
45
30
15
0
MID-YEAR GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 153
FINAL GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 140
TOTAL GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 293


SECTION GRADES OF INSTRUCTOR C
PLATE IV
60
45
30
15
0
MID-YEAR GRADES
1913-14
1914-15
A B C D E
NUMBER OF GRADES
94
FINAL GRADES
1913-14
1914-15
A B C D E
NUMBER OF GRADES
49
TOTAL GRADES
1913-14
1914-15
A B C D E
NUMBER OF GRADES
143


SECTION GRADES OF INSTRUCTOR D
PLATE V
MID-YEAR GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 202
FINAL GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 186
TOTAL GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 388


SECTION GRADES OF FOUR INSTRUCTORS
PLATE VI
600
550
500
450
400
350
300
250
200
150
100
50
0
MID-YEAR GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 648
FINAL GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 583
TOTAL GRADES 1913-14 1914-15
A B C D E
NUMBER OF GRADES 1231

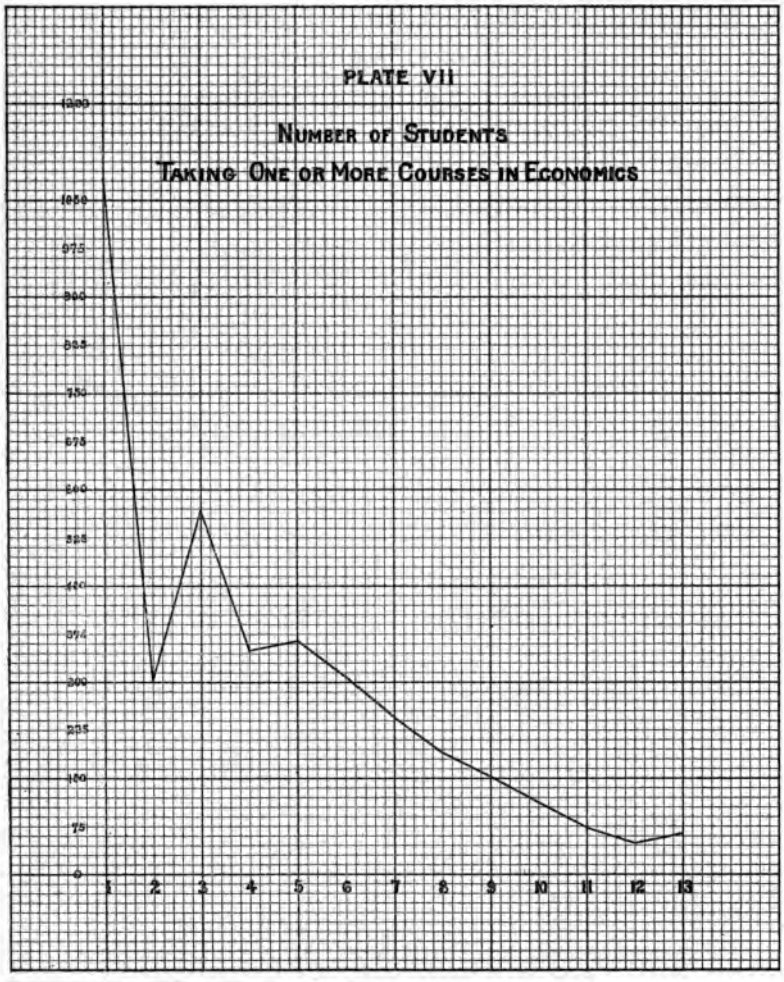


PLATE VII
NUMBER OF STUDENTS
TAKING ONE OR MORE COURSES IN ECONOMICS
1000
900
800
700
600
500
400
300
200
100
0
1
2
3
4
5
6
7
8
9
10
11
12
13

In addition to the number of students, it is also a matter of interest and concern to the Department to know something of the *kind* of student who goes on. Do, for example, the students who receive grade D in the introductory course continue in equal numbers with those who receive A? Standing in the introductory course is, of course, not a final indication of the student's fitness for further study, but it is "contributory" evidence.

The facts as to the continuance in the Department of the A, B, C, D, and E men of Economics A are shown in Table VIII and in the accompanying plate (Plate VIII).

TABLE VIII

NUMBER OF A, B, C, D, AND E MEN WHO TOOK ONE OR MORE COURSES IN ECONOMICS

No. of Courses	1	2	3	4	5	6	7	8	9	10	11	12	13	Totals
A men	96	20	57	26	37	29	24	15	20	16	9	5	12	366
B men	290	65	136	75	95	61	64	65	54	35	19	11	14	984
C men	481	156	276	183	171	171	118	92	63	54	40	28	34	1867
D men	154	53	87	59	49	44	31	16	12	6	6	4	3	524
E men	62	7	13	6	11	3	6	3	3	1	0	0	0	115
Totals	1083	301	569	349	363	308	243	191	152	112	74	48	63	3856

The students who receive the grades of B and C in the introductory course are in the large majority in the advanced classes. In actual numbers there are more D men who continue than A men; only in the count for more than eight courses do the A men begin to outnumber the D men for each additional course.

If one considers the total number who take six or more courses (883 cases), the following are the findings:

A	B	C	D	E
101	262	429	78	13
11%	30%	49%	9%	1%

The percentages for the various numbers of courses taken are shown in Table X.[1] Fifty-four per cent of the E men

[1] See below page 47. This table repeats Table VIII in percentages.

do not continue. About equal percentages of D, C, and B men (26 per cent–29 per cent) and a somewhat smaller percentage of A men (23 per cent) do not continue. There is a distinct difference to be noted between the A and B men in Economics A, on the one hand, and the D and E men on the other. The data, however, do not show whether part of this difference is due to the fact that D and E men leave college altogether. If a man leaves college, of course he does not take advanced courses in any department, Economics among the rest; so that in the group of those who take from six to twelve advanced courses a lower percentage of men of any given standing is produced by those who drop out of college, as well as by those who stay and prefer to do their work in other departments.

Speaking in general, then, about one-half of those who receive E in Economics A continue in the Department, and approximately three-fourths of those receiving each of the other grades.

Leaving out the question of the E men, some of whom doubtless leave college, the grade received in the introductory course appears to have no particular effect on elections of advanced courses in the Department.

Another way of grouping the students of Economics A is according to the grade of the advanced courses taken by those receiving the various marks in Economics A. "Grade" here means only the distinction between a course that is open to both graduates and undergraduates, and one that is open to graduate students exclusively. The differences in the extent of elections in the lower, middle, and upper group courses may be seen in the accompanying chart (Plate IX). Thus, of the 46 per cent of men who received E in Economics A and took further courses in the Department, 45 per cent took only those courses open to both undergraduate and graduate students, only 0.9 per cent tak-

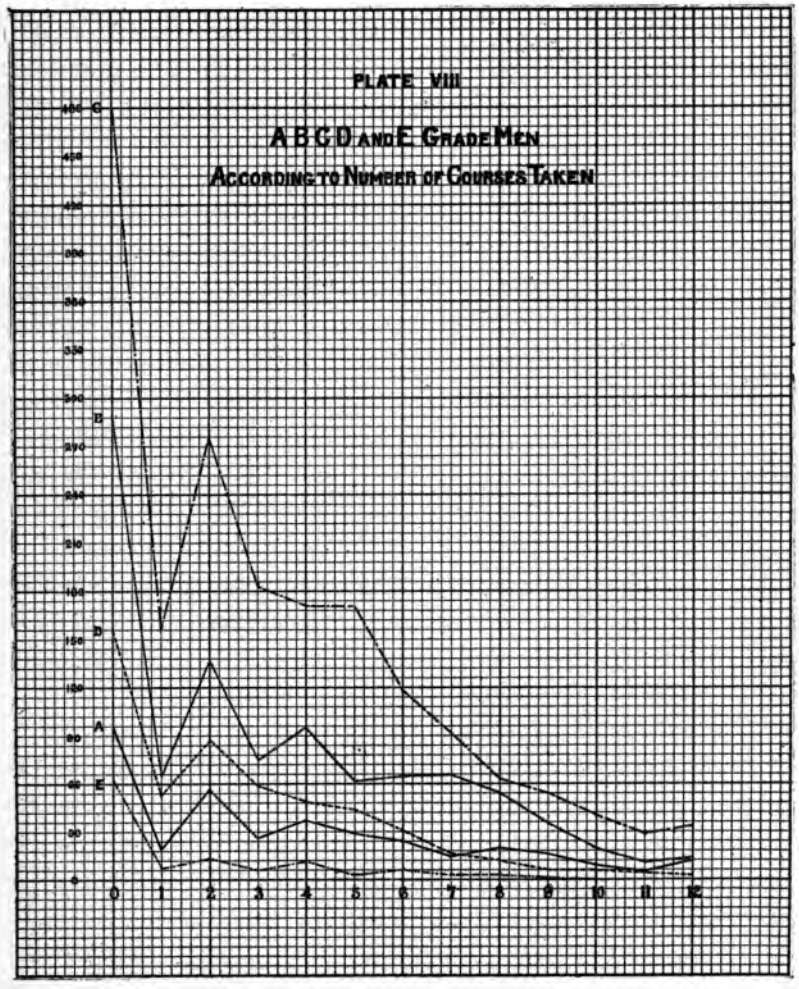
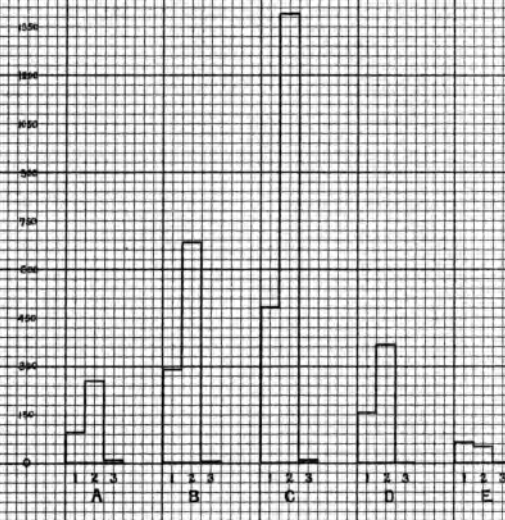


PLATE VIII
A B C D AND E GRADE MEN
ACCORDING TO NUMBER OF COURSES TAKEN
C
E
D
A
E
0
1
2
3
4
5
6
7
8
9
10
11
12

PLATE IX

Elections in Lower Middle and Upper Group Courses

	No. of Cases	1 Lower	2 Middle	3 Upper
A	364	24.3%	70.4%	3%
B	987	29.3	68.7	.8
C	1874	25.6	73.7	.5
D	323	28.4	70.5	
E	115	53.8	45.1	.8



ing exclusively graduate courses, this being a single individual. The 71 per cent of the D men who did some advanced work in Economics did it exclusively in courses open to undergraduates. Of the C men, only 0.5 per cent took exclusively graduate courses, ten individuals out of eighteen hundred and seventy-four. A slightly larger percentage of those who received B in Economics A took exclusively graduate courses, 0.8 per cent, or eight individuals out of nine hundred and eighty-seven who received B in Economics A (a smaller number, but a slightly larger proportion). In the case of the A men of Economics A, both the actual number and the proportion is greater, for eleven men out of three hundred and sixty-four who received A in Economics A went on to exclusively graduate courses. This is 3 per cent, or the same proportion of A men as took twelve half-courses beyond Economics A.

The grouping according to grade of courses serves to differentiate between those who received A in Economics A and those who received B. Actual numbers of individuals are as follows in our data (Plate IX):

TABLE IX

Number of Economics A men in study	3863
" who took exclusively graduate courses	30
" of these who were A men in Economics A	11
" who were B men in Economics A	8
" who were C men in Economics A	10
" who were D men in Economics A.	0
" who were E men in Economics A	1

If the same proportion of the B men in Economics A took exclusively graduate courses as of the A men there would have been thirty instead of the eight. The same proportion of the eighteen hundred and seventy-four C men would have given fifty-seven, instead of ten. Considering the disproportionately large number of A men who take exclusively graduate courses as compared with the B, C, and D men,

it may be said that the grading in Economics A has to a certain extent differentiated the students, since it gives A to a third of the men who afterwards take exclusively graduate courses, whereas it gives A to only about a tenth of the whole number of Economics A students. It gives B to about one-third of those who afterwards take exclusively graduate courses and to four-tenths of all the students in Economics A, from which it may be deduced that a man receiving A in Economics A is four times as likely to go on to exclusively graduate courses as is the man in Economics A who receives B. In other words, the proportion of A men in Economics A who take exclusively graduate courses is four times as great as of the B men. The rule of the Department that only candidates for the degree with distinction shall be admitted to graduate courses practically excludes from them all but the A and B men.

The general conclusions as to the connection between grades in Economics A and the election of advanced courses are: (1) About twice the proportion of A and B students take six or more courses in Economics beyond Economics A as D students. The proportion of C students is midway between. (2) The proportion of E students who take courses beyond Economics A is only half that of all other grades. Our data do not show what part of this is due to E students dropping entirely out of college. (3) Four times as large a percentage of A students take exclusively graduate courses as of B students. (4) Standing in Economics A does not greatly deter or incite to further elections in the Department, but it is fairly reliable as an indication of a student's probable advance into strictly graduate study.

TABLE X

TABLE SHOWING PERCENTAGES OF THOSE RECEIVING THE VARIOUS GRADES IN ECONOMICS A WHO ELECT DIFFERENT NUMBERS OF ADVANCED COURSES IN ECONOMICS

Grade in Economics A	Number of Half-courses Beyond Economics A												
	0	1	2	3	4	5	6	7	8	9	10	11	12
A	23	5	16	7	10	8	7	4	5	4	2	1	3
B	29	7	4	8	10	6	7	7	5	4	2	1	1
C	26	8	14	10	9	9	6	5	3	3	2	1	2
D	29	10	17	11	9	8	6	3	2	1	1	0.7	0.5
E	54	6	11	5	10	3	5	3	3	0.8			

B. *The Relation between Grades in Economics A and in Other Courses in the Department of Economics.* The previous sub-section reported the facts as to the sort of students who elect advanced courses in the Department, judged on the basis of their grades in the introductory course. It is also of interest to inquire whether the grades obtained in the introductory course give indication of the probable standing of the students in the advanced courses of the Department. Is there reason for encouraging an A student in Economics A to elect advanced courses rather than a D student; and is the A student more likely to receive higher grades in these courses than the D student?

Eight hundred and ninety individuals are included in this study, each of whom took six or more half-courses beyond Economics A.[1] The distribution of the marks in Economics A was that 96 received A; 268 received B; 420 received C; 78, D; and 28, E. The percentages are as follows: A, 11; B, 30; C, 47; D, 9; E, 3.

The A men of Economics A received seven hundred and thirty-eight marks in advanced courses, about a third of these being A's. The B men of Economics A received two thousand and fifty marks in advanced courses, a tenth of

[1] Seven additional cases to the 883 discussed in section A of this chapter have been included in this part of the study.

these being A's. Of the marks in advanced studies given to men who stood D and E in Economics A, only one in fifty was an A, while the C men in Economics A succeeded once in thirty times in getting an A in advanced courses. These facts are shown in the A row of the table, showing the percentage of A's in advanced courses obtained by A men, B men, etc., of Economics A; e. g., thirty-five per cent of the marks in advanced courses of men receiving A in Economics A were A, forty-four per cent of their marks in advanced courses were B, etc.

TABLE XI

TABLE SHOWING THE PERCENTAGES OF THE VARIOUS MARKS IN ADVANCED COURSES IN ECONOMICS OBTAINED BY THOSE RECEIVING THE VARIOUS MARKS IN ECONOMICS A

Marks in Advanced Courses	Marks in Economics A				
	A	B	C	D	E
A . . .	**35**	*10*	3	2	2
B . . .	*44*	**44**	*21*	10	13
C . . .	20	*40*	**60**	*58*	55
D . . .	1	6	*13*	**23**	*23*
E . . .	0.2	0.8	3	*7*	**6**

The heavy-faced type indicates what is called "absolute retention"; that is, sixty per cent of the marks of the C men of Economics A were also C in the advanced courses. This is the percentage of perfect retention. The italic indicates "approximate retention"; that is, twenty-one per cent of the marks of the C men were B in the advanced courses, and thirteen per cent were D, so that the total "approximate retention" here is thirty-four per cent. The grades which are still further dispersed from the grade in Economics A are printed in ordinary type. The greatest scattering of the grades in the advanced courses is in the column of the E men, half of whose marks in the advanced courses are C. The E men of Economics A receive about the same proportion of C's in the advanced courses as do the C men

and D men. Fifty-four marks out of ninety-four given in advanced studies to men who had received E in Economics A were C.

These facts are clearly shown in the series of graphs in Plate X. In general, it is evident that the practice of the Department is to lower the grades of the A and B men who continue in the Department and raise the grades of the D and E men. This practice, there is every reason to believe, misrepresents the facts of the case and is due largely to the artificialities of grading. It is reasonable to believe that the A and B men of the introductory course are quite as capable of at least maintaining their rank as the poorer students are of improving theirs. To offset this conclusion Professor Day has suggested that certain men do good work in advanced courses of a more or less practical character, whereas the general and largely theoretical character of the introductory course may make it difficult for them to get marks of distinction.

The actual numbers of marks received by the various groups of students in the six or more additional half-courses are as follows: (from this table it is possible to calculate the degree of closeness in agreement between grades in Economics A and in the advanced courses).

TABLE XII

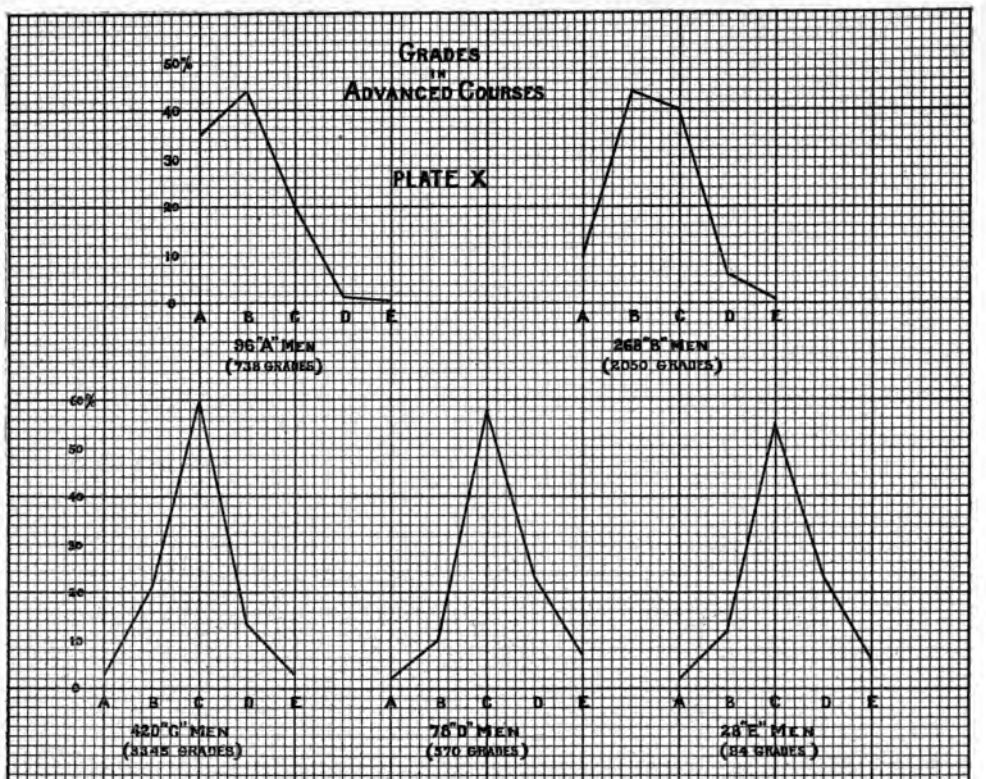
TABLE OF THE DIFFERENT GRADES IN ADVANCED COURSES IN ECONOMICS RECEIVED BY STUDENTS RECEIVING THE VARIOUS GRADES IN ECONOMICS A WHO TOOK SIX OR MORE HALF-COURSES IN ECONOMICS BEYOND ECONOMICS A

Marks in the Advanced Courses	Marks in Economics A					
	A	B	C	D	E	Sums
A . . .	258	205	100	11	2	576
B . . .	325	944	703	57	12	2041
C . . .	147	862	2006	331	52	3398
D . . .	7	123	435	131	22	718
E . . .	1	16	101	40	6	164
Sums . .	738	2150	3345	570	94	6897

The product-moment (Pearson) coefficient of correlation between grades in Economics A and advanced courses in Economics of those who took six or more advanced half-courses is r = + 39.4 per cent. It will be of interest to compare this coefficient of correlation with those given in Section IV. It indicates but a small amount of relation between the standing of students in their introductory and advanced work. This is probably in large part a misrepresentation of the facts, due to a somewhat arbitrary lowering of the grades of the superior students of Economics A and an equally arbitrary raising of the grades of the inferior students; but in itself it shows that standing in Economics A is not, under present conditions, a very reliable guide to probable standing in advanced courses.

One further point of interest in connection with the relation of grades in the introductory and advanced courses may be mentioned. The grades in Economics A of students who go on to the extent of taking six or more half-courses are on the average somewhat higher than the grades of those who take fewer courses. In order to secure these averages, the following values were given to the grades: A = 1; B = 2; C = 3; D = 4.5; E = 6. (Cf. Appendix A, below.) The grades of the eight hundred and ninety students who took six or more courses average 2.69; of those, twenty-nine hundred and sixty-six in number, who took less than six courses, the average grade is 2.90, which is about one-fifth of a grade below. The students who go on to do much work in Economics stand higher than those who do not. This supplements the conclusion presented above as to election of advanced courses. The future specialist in Economics is marked by what he does in course A; but a man who does poorly in that course may nevertheless take a good many advanced courses and do well in them.

Of even more significance are the differences among the


GRADES
IN
ADVANCED COURSES
PLATE X
50%
40
30
20
10
0
A B C D E
96 "A" MEN
(718 GRADES)
268 "B" MEN
(2050 GRADES)
60%
50
40
30
20
10
0
420 "C" MEN
(3145 GRADES)
76 "D" MEN
(570 GRADES)
28 "E" MEN
(84 GRADES)

groups which elect individual courses. The average grade in Economics A of those who subsequently take Economic Theory is very high, 1.76; of those who take Economic History, 2.54; of those who take Money and Banking, 2.66; and of those who take Sociology, 2.64. This shows that there is marked variance in the average abilities of the groups selected by the advanced courses. It is worth while for an instructor to know the standing of his men, not only in the introductory course in his department, but in the whole range of each student's work. A brilliant group of students should not be taught or marked as an ordinary, unselected group.

The recent decisions of the Department concerning election of graduate courses by undergraduates do not affect the conclusions of this section, for the data were gathered from the students' records in years before the decisions were made, and the problems involved persist in spite of them.

IV. Economics and Other Subjects — Correlation of Grades

A. *The Significance of Correlations.* When comparison of the grades received by the same students in two different courses shows that those who receive A in the one also receive A in the other, B in the one, also B in the other, and so on; or when it shows a tendency to such agreement so marked as unquestionably to be more than a matter of chance; and especially when one pair of courses shows such positive correlation much more markedly than another pair — then it is evidently worth while to discover the factors at work in producing so noticeable a result. Thus Economics A and Mathematics C show a correlation of 58 per cent — an agreement more than half complete; whereas Economics A and Admission Civil Government show no correlation at all, their coefficient (— .01) being so near zero as to indicate

no significant relation whatever between the two series of marks. What do these facts imply?

Granted that the students are really the same — that they are not only the same persons, but that their general capacity for work, their determination to succeed, and their power of assimilation remain unchanged, then the only other factors which can operate to produce or prevent correlation are, first, the closely related character of the subjects as they are presented to the student by the instruction he receives, and second, the accuracy with which the instructors estimate each student's achievement. It is natural to suppose these factors operative in producing such a correlation as that between Physics C and Mathematics C, which is .61.

The fundamental capacity of the student does not, of course, remain always exactly the same; his vitality varies even from day to day, and a change in health or circumstances may make a marked change in that mysterious "central factor" of intelligence which undoubtedly plays an important part in intellectual accomplishment: but this factor, as a number of studies[1] show, does remain fairly constant, "good students" persisting throughout their whole scholastic career (and, so far as has yet been determined,[2] later in life as well) in capturing the "high marks". Positive correlation may therefore be explained in part on the ground of persistence in relative native ability, including in that term the important element of purpose or will.

This tendency of native ability to give men the same rank in two courses no doubt has something to do with a correlation such as that between Economics A and Government I, which is .56; but on the basis of such an explanation we

[1] Dearborn, W. F. The Relative Standing of Pupils in the High School and in the University, Madison, Wis., 1909.

[2] Cf. President Lowell's study of College Rank and Distinction in Life, *Atlantic Monthly*, October, 1903, also President Lowell's study of College Studies and Professional Training, *Educational Review*, October, 1911.

might here expect an even higher correlation, since these courses attract men of about the same age and college standing: also, how shall we account on grounds of native ability for the difference between the correlations of Economics A — Government I, which is .56, and English A — History I, which is only .40? The men who take these courses are practically the same; they form a large group, without much possible variation in native ability from one course to the other.

There can be no question of the fact that native ability is called forth in differing degrees by different subjects — that the students who respond to and work effectively in some subjects are not equally stimulated by others. The appeal of a subject is affected, of course, by the method of its presentation and by the personality of the teacher; yet it may legitimately be supposed that these factors will not, ordinarily, so greatly disturb the relative *rank* of students, on which the calculation of a correlation coefficient is based, as to obscure the effect of the subject itself on the varying character of their minds. Positive correlation may also be taken to indicate, therefore, that the requirements of two subjects are germane — that they appeal in equal degree to minds of equal capacity, and similar interests, and that for the student, the vital question of probable success in study may receive the same answer in both. To take one of these subjects may be supposed to be helpful in taking the other, either because of relation in the content of the subjects or because of relation in the point of view or habit of attack required. This similarity of content or method probably helps to produce the relatively high correlation between Economics A and Government I, and the even higher correlation (.67) between Economics A and the advanced course in Economic Theory, although in the latter case it is possible that other factors, to be mentioned later, are also at work.

Positive correlation presupposes the same degree of accuracy in marking. It cannot be said that any marking is very accurate; justice, as a later chapter of the Report points out, is almost as difficult in marking as in the law. But granted an equal effort to be just and granted bases of judgment not essentially different, the variations from accuracy in the case of two instructors will not fatally disturb the action of other factors in bringing about the same distribution of ranks in their two courses. *Standards* may vary without any effect on correlation, provided students of all ranks take both the courses in question; for mere severity, equitably applied, will not prevent students at the top of the list in an "easy" course from being at the top of the list in a "hard" one. But low correlation, or absence of correlation, or negative correlation, may indicate that marking in one course is based on considerations given little weight in another; as for example, when in one course a student may earn a C or a B by virtue of careful, well-organized, faithful work, whereas in another he is required to show imagination or graces of form in themes or essays. The low correlation between Economics A and English A (.27) may perhaps be accounted for on these grounds. Such a difference in principles of judgment may be considered an aspect of the difference between one subject and another: but in certain cases it may indicate that marking in a given course is not well regulated or based on clearly conceived requirements.

One other possibility in marking may affect correlation, namely, the possibility that only the good students in one course (of the correlated pair) take the other, and that in that other, the marking is relatively high: — then correlation will also be high. This may be partly the case in the Economics A — Economic Theory correlation, as facts presented at the end of Section III suggest. It was there

shown that the average grade of men taking Economic Theory was very high, namely, 1.76 (or approximately B+) and the coefficient of correlation is correspondingly high, — (.67). Or if only poor students in one course take the other, and the marking is high, then correlation will be low — and other cases can be imagined. If correlation is not to be obscured by differences of standard, students of all ranks must be present in both courses. The method of correlating explained below is especially devised, however, to discount ordinary differences in the "form" of distributions — e. g., the difference between an instructor who habitually gives 10 per cent of A's and an instructor who never gives more than 2 per cent.

On the whole, it must be admitted that the significance of many of the correlation coefficients here reported is in good part a matter of conjecture. None of the correlations we have worked out is strikingly high; only one is negative; but some are much higher than others. Those who know the courses must consider the various possible explanations for difference in correlation between any two pairs. In the case of two pairs of large courses, such as the pairs Economics A — History I and Economics A — English A, relative native ability as a factor may be dismissed. These courses get students of all abilities; and on that score the correlations of the two pairs should be the same. Difference in correlation between the two pairs must indicate differences in the relations of the subjects or in the bases for marking. There is also the possibility that really marked differences in the effectiveness of the teaching would appear in such differences of correlation; for if of two courses it were true that good teaching in each won successful effort from students in approximately equal degree, whereas of two others it were true that one secured it in high degree, but the other only from those who could not be discouraged by any teach-

ing, however uninspired, then the correlation of the first two, other things equal, would be much higher than that of the other two. No courses we have correlated can be said to vary in any such way, but variations in effectiveness of teaching do of course exist, and they cannot be left wholly out of account.

It is not safe, in any case, to draw the conclusion that the training given in one course is of advantage in another, merely because the two correlate, or that the training in one is barren of results in the other because they do not correlate. But when courses do correlate, it is reasonable to expect that a student who has done well in one will do well in the other, and hence to advise him for his own sake to take it — or if one's philosophy so dictates, not to take it.

B. *Correlations — Economics and Other Subjects.* The method by which the main set of correlations (given in Table XV) was calculated is explained below. It differs somewhat from the method in common use, and makes certain appreciable differences in the ranking of the various pairs of courses, as to correlation. In order to calculate the correlations it was necessary to translate the letters A, B, C, D, and E, into numerical values, which were assigned as follows: A = 1, B = 2, C = 3, D = 4.5, E = 6. This schedule was adopted after a study of the grouping of the grades given in various courses.[1]

The first set of correlations was calculated in order to obtain an average correlation for typical pairs of courses not including any course in Economics. It would be desirable to get correlations for a larger number of pairs, in order to secure an average correlation more widely representative of the various subjects taught in the college; but the average correlation obtained is useful enough for the present purpose.

[1] For a discussion of the evaluation of grades see Appendix A, at the end of this section.

TABLE XIII

CORRELATIONS[1] IN PAIRS OF COURSES NOT INCLUDING ANY COURSE IN ECONOMICS

Number of cases	Courses	Coefficient of Correlation (r =)
182	Physics B or C and Mathematics C or F	.55
890	History 1 " Government I	.54
276	German A or B " Latin A or B	.53
114	English A " History I	.32
68	English A " Philosophy A	.28
1530		

The weighted average of the coefficients of correlation for these pairs is .50. This figure may be taken as a guide in deciding whether a given correlation between Harvard courses is high or low. It, as well as the separate correlations of Table XIII, is reckoned by the "product-moment" (Pearson) method (coefficient designated "r"); and would have been somewhat higher if reckoned by the "rank-difference-squared" method (coefficient designated "rho"), by which the longer list of correlations given in Table XV was calculated. The range of the correlations in Table XIII shows the amount of difference in the tendency of different pairs of courses to cause shifting of ranks.

Table XIV gives correlations between Economics A and various other courses, both in Economics and in other subjects. These are also reckoned by the "product-moment" method, and may be compared directly with the correlations given in Table XIII.

[1] Coefficients of correlation are in terms of r, the "product-moment" method of Pearson.

TABLE XIV

CORRELATIONS BETWEEN ECONOMICS A AND OTHER COURSES

("Product-moment" formula)

Number of cases	Courses	Coefficient of Correlation (r =)
167	Economics A and Mathematics C	.52
143	" " Economic Theory	.51
510	" " Government I	.51
263	" " Money and Banking	.50
334	" " German A or B	.48
387	" " Sociology	.48
811	" " Econ. History U. S.	.47
346	" " Physics B or C	.46
528	" " History I	.42
439	" " Mathematics F	.40
6897	" " All other Economics courses	.39
432	" " Chemistry I	.36
334	" " Latin A or B	.33
168	" " English A	.23

The weighted average of these correlations is 41.

The fact that only three correlations in this list are higher than the average for the pairs listed in Table XIII and none as high as the three highest of that five, deserves some comment. It is due in part to the fact that the "product-moment" method of calculation takes no account of the differences in habit of marking between two instructors, as is explained below. By the "rank-difference-squared" method some of these correlations are considerably higher in the total list. (See Table XV.) Even so, the only courses, outside of other Economics courses, with which Economics A correlates particularly well are Mathematics C and Government I. An explanation for the correlation with Government I is suggested above;[1] the correlation is not unnatural, since the two courses are large under-class courses, not unrelated in content. Is it possible that the correlation

[1] It is interesting to note that in reply to the questionnaires a large number of students reported Government I as the most helpful course in its relations to Economics.

with Mathematics C is due to an inherent relation between Mathematics and Economics, or to the fact that both courses are highly systematic and demand continuous application of an analogous character? Neither conclusion can be adopted without facing the fact that Economics A and Mathematics F show a correlation of only 40.3 (see Table XIV); Economics A and Admission Algebra of only 21.6 (see Table XV). The facts reported in Section I of this chapter are also against either conclusion. If it can be shown that these correlations are low because of peculiarities in the way marks are assigned in Admission Algebra and in Mathematics F, the conclusion that Mathematics and Economics are inherently related will be strengthened. In general, it may be said that Economics does not show any marked relation to any other field, but in this respect is probably not very different from other college courses. On the other hand it is much better in these respects than English A. The correlations of English A with History I, Philosophy A and Economics A are the lowest, with the exception of the admission subjects. Markedly low correlations give reasonable ground for question as to the standards of marking used, or the character of requirements, or both. The low correlations with admission subjects shown in Table XV, below, are of much significance, especially in view of the fact that high-school marks and college marks correlate much higher. (Cf. note to Table XV, and Section V of this chapter.)

The following table gives the complete set of correlations, calculated by a modification of the rank-difference-squared method of Spearman, which, for reason discussed in Appendix B at the end of this Section, was considered to be applicable to these cases. It includes a number of correlations with admission subjects, and these, it will be noticed, are all low on the list.

TABLE XV

Complete List of Correlations [1]

Percentage of Correlation Given by Method of Rank-Difference — Squared

n	Pair of Courses	ρ	P. E.	Rank in ρ
143	Economics A vs Economic Theory	.67	3	1
182	Physics B or C vs Mathematics C or F	.61	3	2
811	Economics A vs Economic History U. S.	.59	3	3
167	" Mathematics C	.58	3	4
510	" Government 1	.56	2	5
263	" Money and Banking	.56	3	6
890	History 1 vs Government 1	.54	2	7.5
276	German A or B vs Latin A or B	.54	3	7.5
334	Economics A vs German A or B	.51	3	9
346	" Physics B or C	.49	3	10
528	" History 1	.47	2	11
387	" Sociology	.46	3	12
6897	Marks in Ec. A vs average in Other Economics	.44	1	13
439	Economics A vs Mathematics F	.43	3	14
432	" Chemistry 1	.42	3	15
334	" Latin	.41	3	16
114	English A vs History 1	.40	5	17
68	" Philosophy A	.31	7	18
20	Economics A vs Admission Economics	.29	14	19
168	" English A	.27	5	20
3365	" Admission Latin	.26	1	21
3479	" " Algebra	.21	1	22
3165	" " Science	.21	1	23
3415	" " English	.08	1	24
42	" " Civil Government	−.01	10	25

[1] For purposes of comparison with the coefficients of correlation given above, some others based on similar materials may be mentioned. E. A. Lincoln, in a study published in *School and Society* for April 7, 1917, found a correlation between the high school and Freshman marks of Harvard Freshmen of r = 67 +. The grades A, B, C, D, and E were given in this study the percentage values of 95, 83, 68, 53, and 35. The results of Dearborn in the case of the ranks of 238 pupils from the Madison (Wis.) high school show a correlation with their standing in the Freshman year at the University of Wisconsin of r = 66.8. A general group of 472 pupils from several high schools showed a correlation between standing in high school and standing in the Freshman year at the University of r = + 80. These studies, as well as that of Lincoln, are correlations of average standing in several subjects, and are not directly comparable to correlation between single subjects. Rietz in a recently published study found a correlation of r = 0.528 between the standing of 161 students in their college courses in Mathematics at Dartmouth and their standing in the Dartmouth Law School.

The only additional comment suggested by these tables concerns the fact that Economics A correlates rather poorly with all other Economics courses taken together. This may be due in part to the fact that in this case a correlation is made between a *single* mark in the one course and an *average* of marks in other courses. There is, however, a more important factor: the coefficient is based on the marks, 6897 in all, of students who took six or more half-courses beyond Economics A. That there is a somewhat arbitrary shifting of the grades of students between the elementary and advanced courses has been pointed out in Section III. The low correlation depends chiefly on this factor.

In order that the comparison in this case may be seen more in detail, the following tables, which show the per mille distribution of students by grade in the introductory and advanced courses, are added.

The marks in the advanced courses are divided into five horizontal rows according to the grade in Economics A. Table (*a*) represents the distribution of 1000 marks in courses beyond Economics A of students who took six or more half-courses in Economics beyond Economics A. This is based on the actual distribution of 6897 such marks.

Table (*b*) represents the distribution of 1000 marks in advanced courses in Economics based on the actual distribution of marks in four courses, Economic Theory, Money and Banking, Sociology, and Economic History of the U. S. There were 1604 in the actual distribution.

TABLE XVI

PER MILLE DISTRIBUTIONS OF GRADES IN ADVANCED COURSES IN ECONOMICS, COMPARED WITH THE GRADES IN ECONOMICS A

(*a*) GRADES IN ADVANCED HALF-COURSES IN ECONOMICS OF THOSE WHO TOOK SIX OR MORE BEYOND ECONOMICS A

Grade in Economics A	A	B	C	D	E	Sums
A	37	47	21	1	0.1	106
B	30	137	125	18	2	312
C	14	102	291	63	15	485
D	2	8	48	19	6	83
E	0.3	2	8	3	1	14
	83	296	493	104	24	

(*b*) GRADES IN FOUR ADVANCED COURSES; ECONOMIC THEORY, MONEY AND BANKING, SOCIOLOGY, ECONOMIC HISTORY

Grade in Economics A	A	B	C	D	E	Sums
A	54	86	27	2	0	169
B	22	133	127	16	4	302
C	4	76	262	81	13	436
D	0.6	11	44	25	5	86
E	0.6	0	4	2	1	8
	81	306	464	126	23	

In such tables, where the "base" is the same, comparisons can be readily made, since simple additions of certain columns, rows, or diagonals immediately give comparable figures. For instance, comparable figures for the "absolute retention" can be immediately found by adding the principal diagonals. For the general table the absolute retention is 485 per mille. For the four special courses it is 475 per mille. The "approximate retention" found by summing the adjacent diagonals is 424 per mille for the general table, and 443 per mille for the four courses.

The sum of the changes in rank of the general table is 613, and for the four courses 614. The sum of the squares of the changes in rank is 823 for the general table, and 809 for the four special courses. The fact of larger sum of squares in the general table agrees with the lower correlation found for

the general set of marks in advanced courses than for the particular courses, since the correlation measure employed is based upon the squares of deviations from the average, and not upon the original deviations.

The practice of the Department noted above (p. 49) appears clearly from Table XVI. In the general table, 172 A's and B's in Economics A were shifted a rank downward in the advanced courses, against 37 A's retained and 30 B's advanced to A's; whereas 51 D's and E's were shifted a rank upward against 1 E retained and 6 D's lowered to E's. The facts are even more striking in the table for the four courses.

APPENDIX A

In order to carry out the correlation studies, the results of which are presented in this chapter of the Report, it was necessary to assign numerical values to the grades of A, B, C, D, and E. The values employed were as follows: A = 1; B = 2; C = 3; D = 4.5; and E = 6. Different values are given to D and E because it is believed that the step between C and D and the step between D and E are somewhat greater than the steps between A and B and B and C. Grades D and E penalize the student in the way of university credits, etc., and they are, therefore, assigned, in general, more sparingly. In the case, for example, of 3863 grades assigned in Economics A, the percentages are as follows:

E	D	C	B	A
2.98	13.53	48.51	25.55	9.42

The units adopted are admittedly only approximations. The attempt was made to calculate them more exactly on the basis of the relative frequency of grades assigned, but as the latter varies from distribution to distribution, the above approximations, for which there was also some justification in the percentile equivalents which are sometimes employed in the Recorder's office, were finally chosen.

APPENDIX B

A Modification of the Spearman Rank — Difference Squared Method of Correlation

The formula of correlation suggested by Bravais (1846) to which Pearson gave the name "product-moment" is based on the assumption that the variants in the two series of events in question, — in the present instance college marks in pairs of courses, — are each distributed according to a "normal" or Gaussian curve of frequency, or would be were a sufficient number of cases obtained. The correlation formulae by the method of ranks (or the order of merit of the individual in the group) as proposed by Spearman, assume a rectangular form of distribution and also assume that the unit of rank which separates any two individuals or scores is the same or equal throughout the scale. In the Gaussian curve of frequency the distances which separate any two individuals may be practically zero near the centre or mean of distribution, and very large at either extreme of the distribution. None of these various assumptions altogether holds for the five rank distributions of marks which are dealt with in this investigation. As indicated in Appendix A, the units of rank, in this case the distances between the grades A, B, C, D, and E, are probably not equal, and have been differently evaluated for use in this study. The distributions of marks in college courses, — although for the most part asymmetrical, since more grades of A and B are given than of D and E, — approximate much more nearly the Gaussian or bell-shaped form of distribution than the rectilinear. There is, however, some justification for using a rank-difference method of comparison, since, as noted, the distances between the five ranks have been fixed in the assigning of numerical values.

Both formulae assume further that the general form of distribution in the two series to be compared or correlated is the same or would be the same were there a sufficient number of cases. This is an assumption which ought to hold in many cases in the assignment of grades, e. g., the range or distribution of abilities of five hundred men in an introductory course in Economics will certainly not differ materially from their distribution in many other introductory courses, and especially if all courses are equally open to free election. This,

of course, does not mean that the same men will hold the same ranks in the two subjects, but that if there are ten men of very superior (or A) rank, and fifty of high, but not superior (or B) rank, etc., in Economics, the same proportions should hold in, e. g., History or Government. In many of the distributions compared, however, this is not the case, and in some instances there are reasons why it should not be the case; whereas in other instances the distribution of marks can only be explained on the basis of arbitrary differences in the methods of assigning grades.

This fact may affect the possible extent of correlation in a given pair of courses. The amount of correlation depends mainly, of course, on the number of changes in rank, e. g., if few, there is a high correlation, if many, a low correlation. If we suppose, in the above mentioned case, that from year to year ten men are given A grade in History, whereas but one man is given an A grade in Economics, it is evidently not possible for the ten highest men in Economics to secure the same rank as in History. Such changes in rank as these, which are caused by differences in the general form of distribution of grades, if these differences are purely arbitrary, should not be permitted to affect the correlation of the two courses — that is, the extent to which men in one group maintain the same rank which they hold in the other. A modification was therefore introduced into the rank-difference formula to discount or neglect differences in rank brought about in this way, and has been applied equally to all the pairs of courses compared. In some cases this is doubtless not fair, because there may be reasons which justify the distribution of grades employed. In view of this and other considerations mentioned above, it is not unlikely that the product-moment formula may give, on the whole, equally accurate correlations.

The formula used was worked out by Mr. H. A. Sturges and is as follows: $\rho = 1 - \frac{SD^2obt. - SD^2min.}{\frac{SD^2max. + SD^2min.}{2}}$ in which $SD^2obt.$ = the sum of the actual differences in rank; $SD^2min.$ = the sum of the differences in rank caused by differences in the forms of the distribution; and $SD^2max.$ = the sum of the maximum possible differences. The differences are in each case squared before summing. A similar modification of the product-moment formula might have been desirable but was not attempted.

V. Economics and Admission Standing — Correlation of Grades

The correlations between admission subjects and Economics were included in the general table in Section III, above. They were, as there noted, the lowest of the correlations found. It is questionable, however, whether the figures really mean what they would seem to mean: namely, that there is little or no relation between the standing in school studies and university studies, or a given university study, such as Economics. There is, on the contrary, good reason to believe from other investigations that the relation between the general standing in high school studies and university studies is close.[1] The low correlation here is due, it is believed, to the standards of marking which prevail in the entrance examinations.[2] This may be seen in part in the lower averages of the grades assigned in the entrance examinations compared with those assigned to the same pupils in the Economics course. These averages are shown in the following table, which gives also the correlations in terms of r (the product-moment formula). There is no reason why, in the case of such large groups of students as are listed in four of the comparisons, the *average* grade should not be the same in the two cases.

[1] Cf. W. F. Dearborn, Relative Standing in High School and University. Bulletin of the University of Wisconsin.

[2] In a study published in *School and Society* for April 7, 1917, E. A. Lincoln has shown that in the case of a considerable group of Harvard Freshmen, the relation between the standing of these pupils in high school and their standing in the university is much closer than the relation between their standing in the entrance examinations and their university standing.

TABLE XVII

GRADES IN ECONOMICS A COMPARED WITH GRADES OF ADMISSION IN SIX SUBJECTS

Number	Average Grade in Admission Study	Admission Study	Average Grade in Economics	r
20	4.27	Economics	2.80	21.8%
3165	3.08	Science	2.88	17.3
3365	3.53	Latin	2.88	15.5
3415	3.95	English	2.89	13.1
3479	3.14	Algebra	2.88	11.8
42	4.10	Civil Gov.	2.82	0

In order that these comparisons of standing in the examination subjects and the standing in Economics might be studied in greater detail, the results were also put into the form of distribution tables. For the purpose of this comparison, the groups in question were in each case divided into five divisions according to their standing in the admission subject in question. The tables in the case of Admission English and Admission Latin are here given as examples. The first fifth of the group (numbered 1) are the students ranking highest, the second fifth are the students ranking next highest, etc. The group is then also divided into fifths on the basis of standing in Economics A, and the tables are arranged to show how many of those who were in the first fifth of the grouping in the admission subject remain in the first fifth of the Economics grouping, and how many are shifted into the second, third, fourth, or even fifth divisions of the Economics grouping.

The figures in black face type show the cases of "absolute retention"; those who are shifted but one division, either lower or higher, show the extent of "approximate retention."

TABLE XVIII

ENGLISH-ADMISSION

Economics A	1	2	3	4	5	Totals
1 . . .	**5**	35	146	135	9	330
2 . . .	5	**49**	291	448	42	835
3 . . .	9	54	**549**	911	112	1635
4 . . .	2	14	132	**312**	32	492
5 . . .	..	4	35	73	11	123
Totals .	21	156	1153	1879	206	3415

LATIN-ADMISSION

Economics A	1	2	3	4	5	Totals
1 . . .	**28**	81	143	65	6	323
2 . . .	20	**138**	372	291	20	841
3 . . .	23	171	**645**	696	61	1596
4 . . .	6	39	183	**235**	22	485
5 . . .	1	6	50	59	**4**	120
Totals .	78	435	1393	1346	113	3365

ENGLISH-ADMISSION

PERCENTAGES

Economics A	1	2	3	4	5
1 . . .	**2**	11	44	41	3
2 . . .	.6	**6**	35	54	5
3 . . .	.6	3	**33**	56	7
4 . . .	4	3	27	**64**	6
5 . . .	..	3	28	59	**9**

LATIN-ADMISSION

PERCENTAGES

Economics A	1	2	3	4	5
1 . . .	**9**	25	44	20	2
2 . . .	3	**15**	44	35	3
3 . . .	2	10	**40**	44	4
4 . . .	1	8	38	**48**	5
5 . . .	.8	5	42	49	**3**

In the following table, the percentages of "absolute" and "approximate" retention are shown for each admission subject in comparison with Economics A. They show how much shifting about there is, or in other words, how little

retention of position there is. This is, of course, the cause of the low correlations found. It can hardly be supposed that so much shifting of relative ranks is due altogether to the difference between a college course and an admission subject, especially in view of the comparatively high retention of rank as students pass from the high school to the college. Methods of marking in admission subjects are evidently in some degree at fault, or else, which is more likely, admission examinations offer at best only unreliable evidence of ability.

TABLE XIX

PERCENTAGES OF ABSOLUTE AND OF APPROXIMATE RETENTION

	Per cent. of Absolute Retention	Per cent. of Approximate Retention
English and Economics	27	72
Latin and Economics	31	79
Algebra and Economics	32	77
Science and Economics	30	73
Civil Government and Economics	21	62
Admission Economics and Economics	35	60

VI. DISTRIBUTION OF GRADES IN FOUR ADVANCED COURSES CORRELATION OF GRADES AND AGES

A. *Distribution of Grades.* The results of this study may best be presented by an interpretation of the accompanying graphs (Plates XI and XII). The courses in question are Economics A (for comparison), and *Sociology*, *Money and Banking*, *Economic Theory*, and *Economic History*. The marks were taken from the records of students from 1902 to 1913. The number of cases considered was: for Economics A, 3863; for Sociology, 463; for Money and Banking, 230; for Economic Theory, 144; for Economic History, 818. During the ten years covered by our records 3080 men elected advanced courses in Economics, the elections in these four cases constituting 52 per cent of that number.

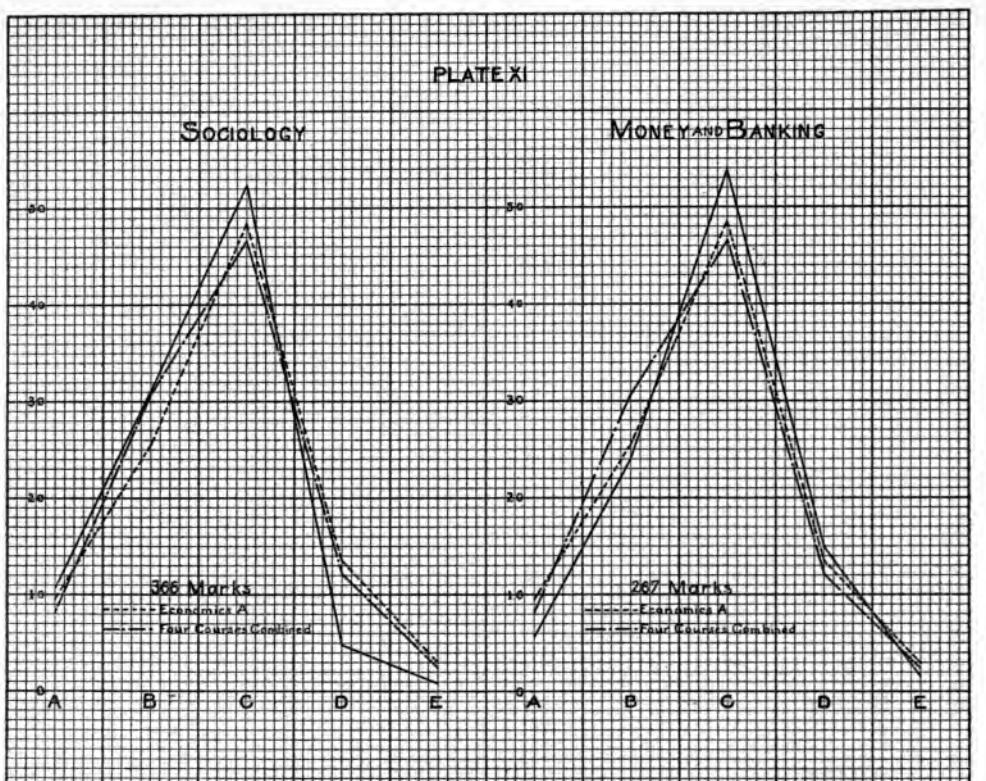


PLATE XI
SOCIOLOGY
MONEY AND BANKING
50
40
30
20
10
0
A
B
C
D
E
366 Marks.
Economics A
Four Courses Combined.
267 Marks.
Economics A
Four Courses Combined.

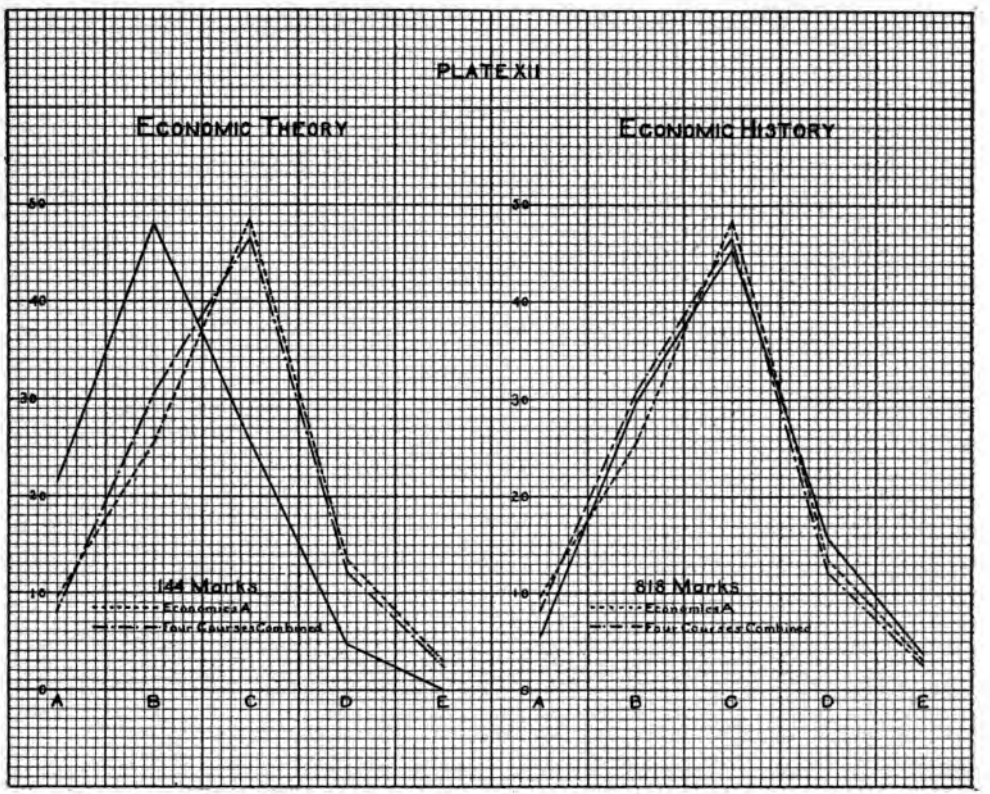


PLATE XII
ECONOMIC THEORY
ECONOMIC HISTORY
50
40
30
20
10
0
A
B
C
D
E
144 Marks
Economics A
Four Courses Combined
818 Marks
Economics A
Four Courses Combined

Plate XI shows the distribution of marks in *Sociology* compared with the distribution in Economics A and the combined distribution for all four advanced courses. There is an obvious trend toward the higher grades, although it is not striking. Plate XI also presents the same comparison for *Money and Banking*. In this case there is a trend toward the lower grades, about as clear as is the trend in the opposite direction in *Sociology*. Plate XII shows a very decided trend toward the higher grades in *Economic Theory*. In the case of *Economic History* (also on Plate XII) the trend is again toward the lower grades, but it is very slight. This course shows a distribution very closely in agreement with the joint distribution for the four advanced courses.

It is natural to expect that grades in advanced courses will be somewhat higher than grades in the introductory course; but the divergence of the grades in Economic Theory from the joint distribution for the four advanced courses would seem to call for some explanation. It may no doubt be due in part to the small number of cases considered, as compared with the numbers in the other courses; and it is probably due also to the fact that *Economic Theory* is known to be a difficult subject, which only the more able students choose. (Cf. Section III, above, p. 51.) In this course it would be especially worth while, however, to examine the standard of grading in the light of a knowledge of the grades in other courses secured by the men registered in it in any given year.

B. *Correlation of Grades and Ages.* Plates XIII and XIV show in two ways the distribution of grades in *Economics A* to students of various ages compared with total distributions selected from the 3863 cases. The first set of graphs compares the distribution of grades for six different ages with the normal distribution for the course. The second compares the range of ages for men receiving each grade

with the normal range of ages in the course — i. e., with the ages of all who took the course from 1902 to 1913. The graphs show clearly that younger men succeed more often and more fully than older men: in other words, the brilliance of the men who enter Economics A at an early age finds no obstacle in the character of the course. The course does not favor, much less demand, maturity. It is "geared" to 18, 19, and 20.

In the case of *Sociology* (Plate XV and Plate XVI) the same general result holds, although without quite so strikingly regular an advantage for the younger men. This subject cannot be said, however, to put a premium on delay in taking the course. A larger proportion of young men than of old succeed in it.

The same outcome, less clear, but not uncertain, appears in *Money and Banking* (Plate XVII and Plate XVIII). (The irregularity of the last figure on Plate XVIII is obviously due to the small number of cases in question.)

In *Economic Theory* (Plate XIX and Plate XX) the tendency of youth to win fuller success is not so clear. The older men are often at an advantage; at any rate, the course does not especially favor the younger men.

Plate XXI and Plate XXII show that *Economic History* pays almost no respect to ages. There is a slight advantage for men of twenty-three, but it is only slight.

These graphs, taken together, corroborate the results of a previous study, presented herewith among the Supplements to this Report (Supplement IV). Young men are not at a disadvantage in college merely because they are young; nor are they at a disadvantage on that account in advanced courses in Economics. If a student has proved his ability in Economics A, it would be unfair to discourage him from entering any of these courses because he happened to be nineteen or younger — although possibly he would do well

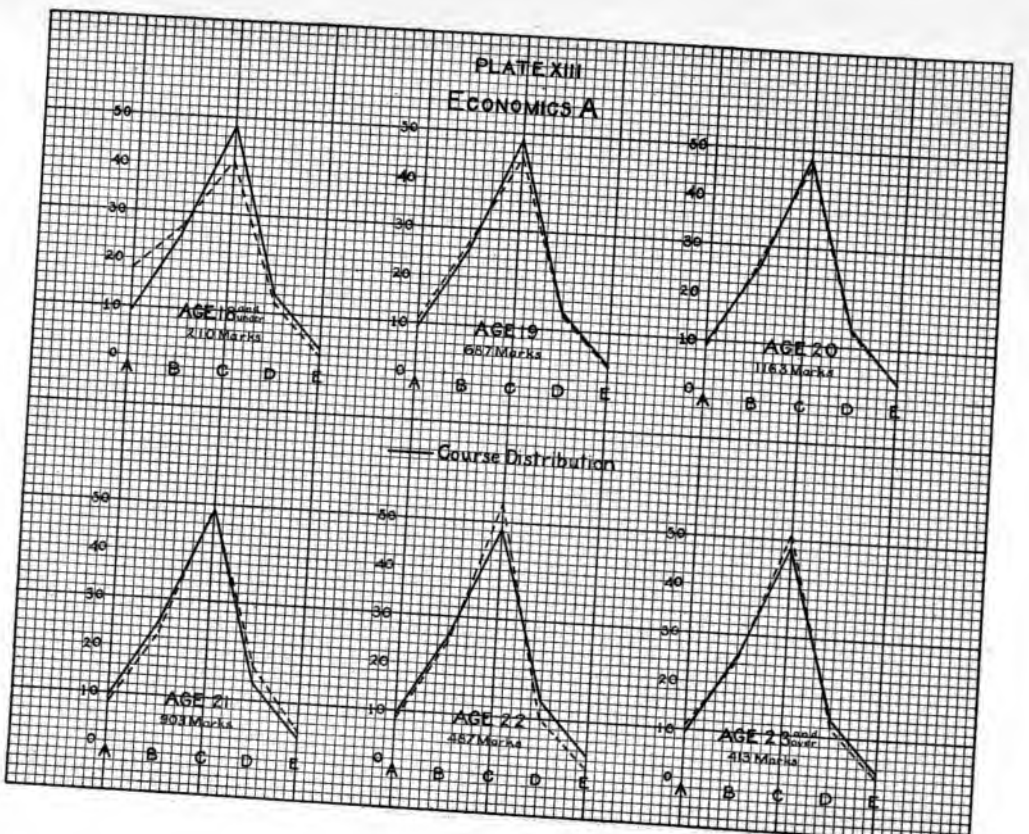


PLATE XIII
ECONOMICS A
AGE 18 Above Average
2110 Marks
AGE 19
687 Marks
AGE 20
1163 Marks
Course Distribution
AGE 21
903 Marks
AGE 22
457 Marks
AGE 23 Above Average
413 Marks
A B C D E

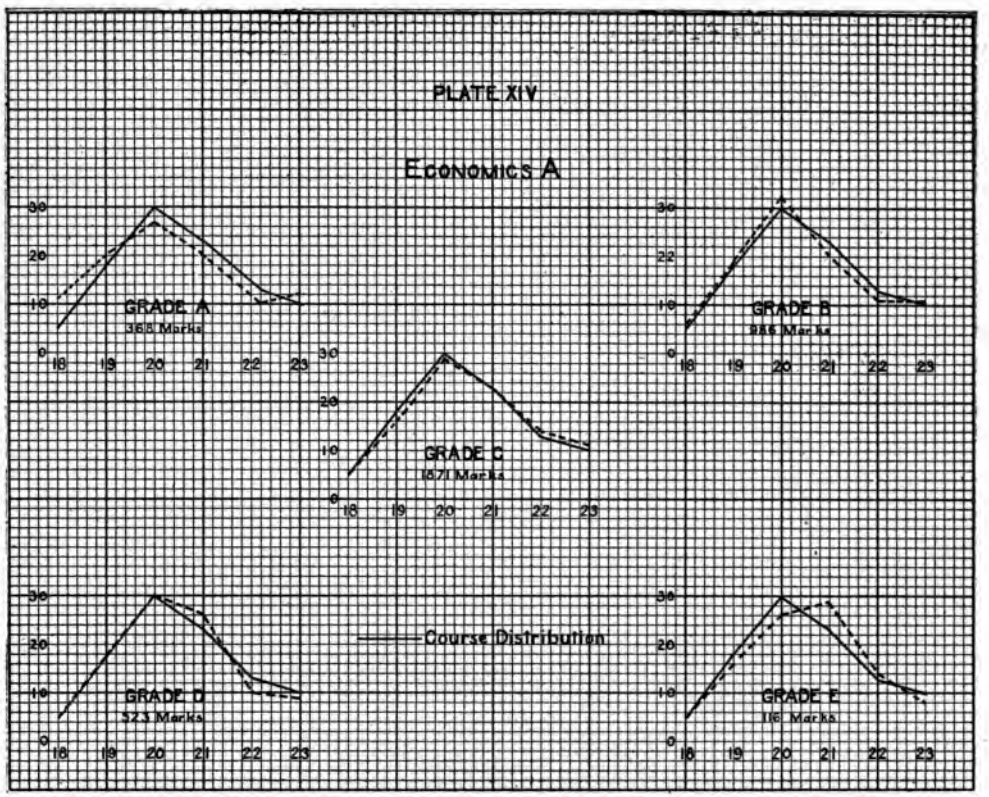


PLATE XIV
ECONOMICS A
GRADE A
368 Marks
GRADE B
GRADE C
GRADE D
523 Marks
GRADE E
116 Marks
Course Distribution
18
19
20
21
22
23

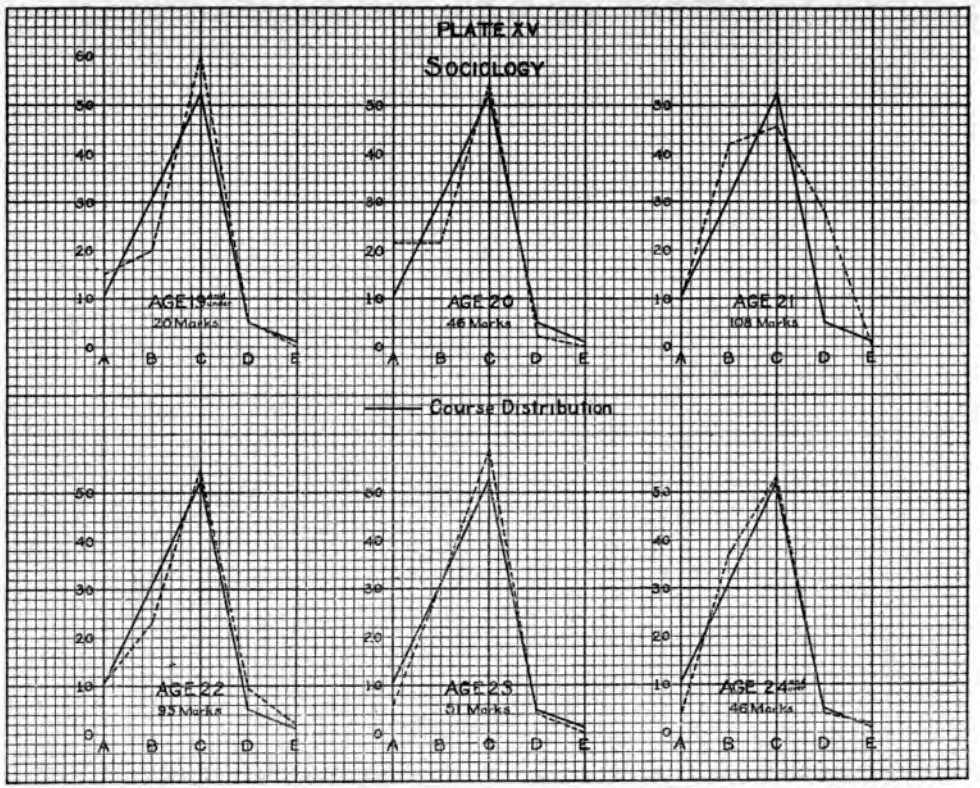


PLATE XV
SOCIOLOGY
AGE 19
20 Marks
AGE 20
46 Marks
AGE 21
108 Marks
Course Distribution
AGE 22
93 Marks
AGE 23
51 Marks
AGE 24
46 Marks
A B C D E

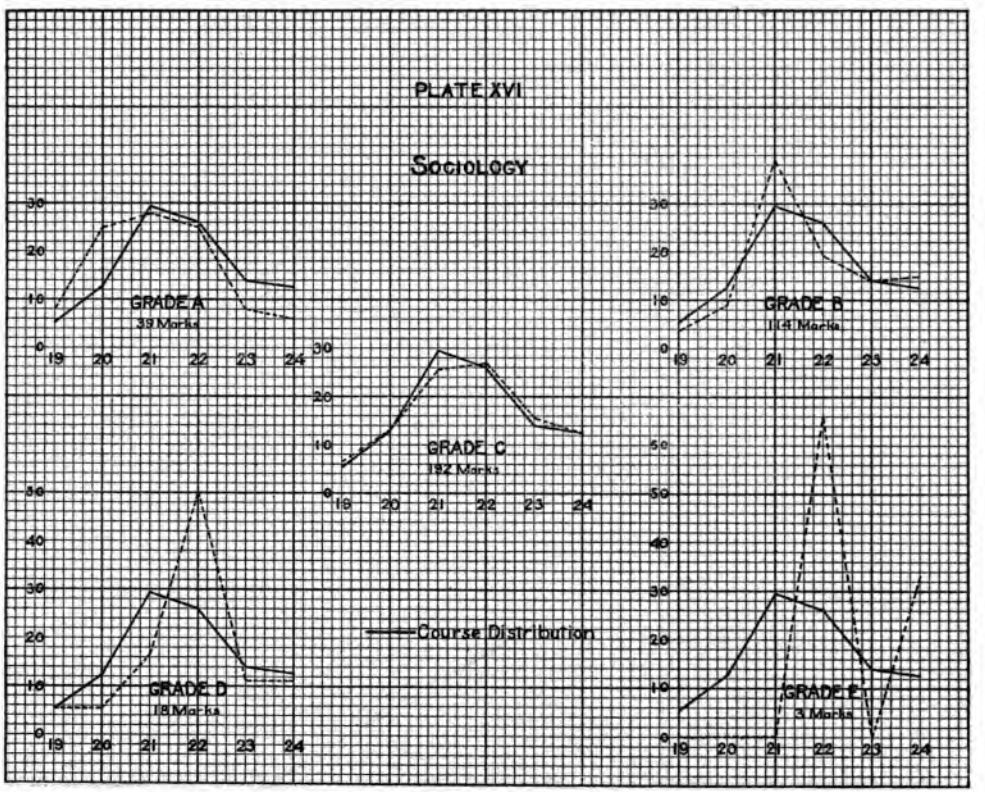


PLATE XVI
SOCIOLOGY
GRADE A
39 Marks
GRADE B
114 Marks
GRADE C
192 Marks
GRADE D
188 Marks
GRADE E
3 Marks
Course Distribution
19
20
21
22
23
24

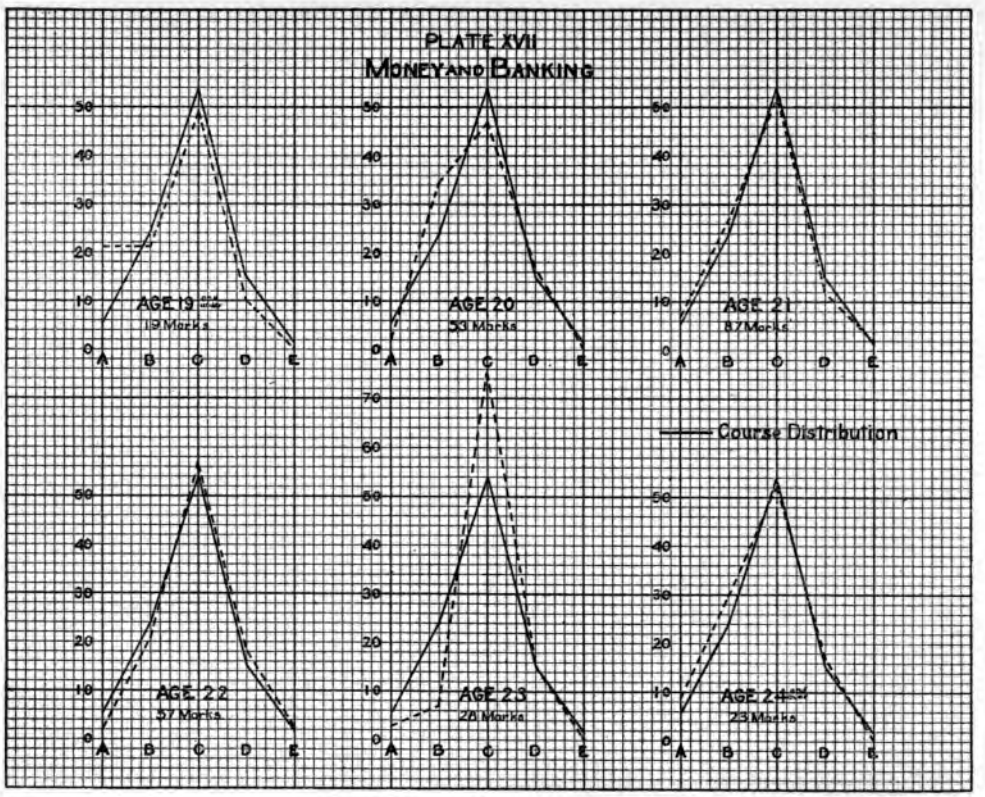


PLATE XVII
MONEY AND BANKING
AGE 19
19 Marks
AGE 20
33 Marks
AGE 21
87 Marks
AGE 22
57 Marks
AGE 23
26 Marks
AGE 24
23 Marks
Course Distribution
A B C D E

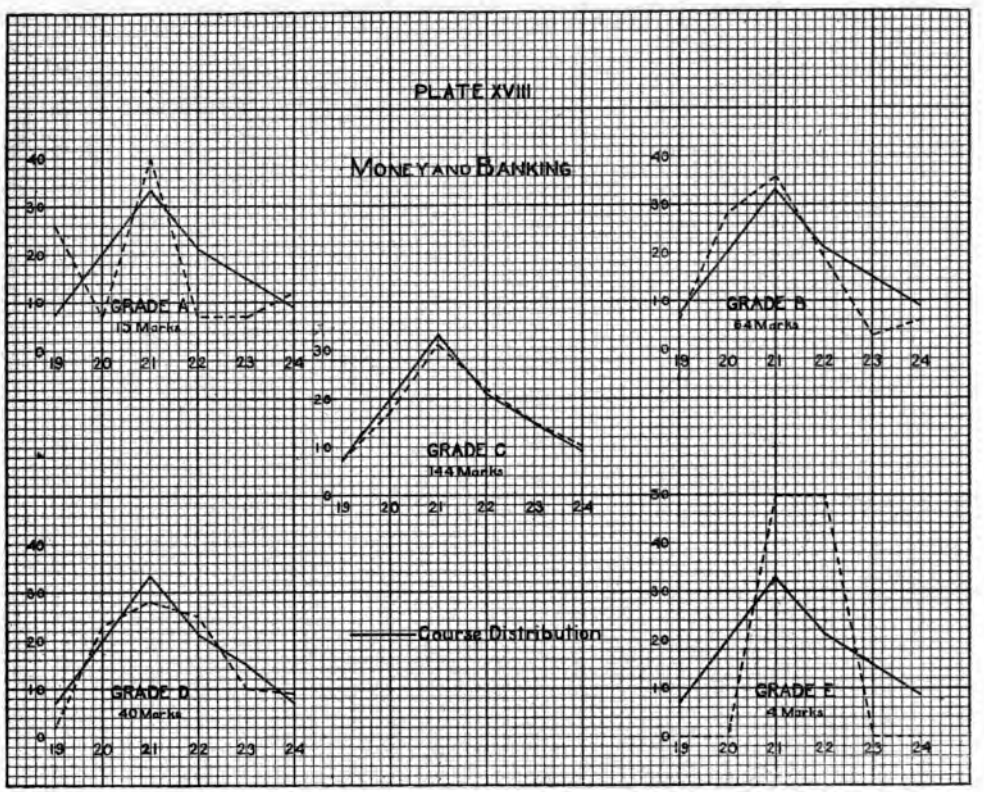


PLATE XVIII
MONEY AND BANKING
GRADE A
13 Marks
GRADE B
84 Marks
GRADE C
144 Marks
GRADE D
40 Marks
GRADE E
4 Marks
Course Distribution

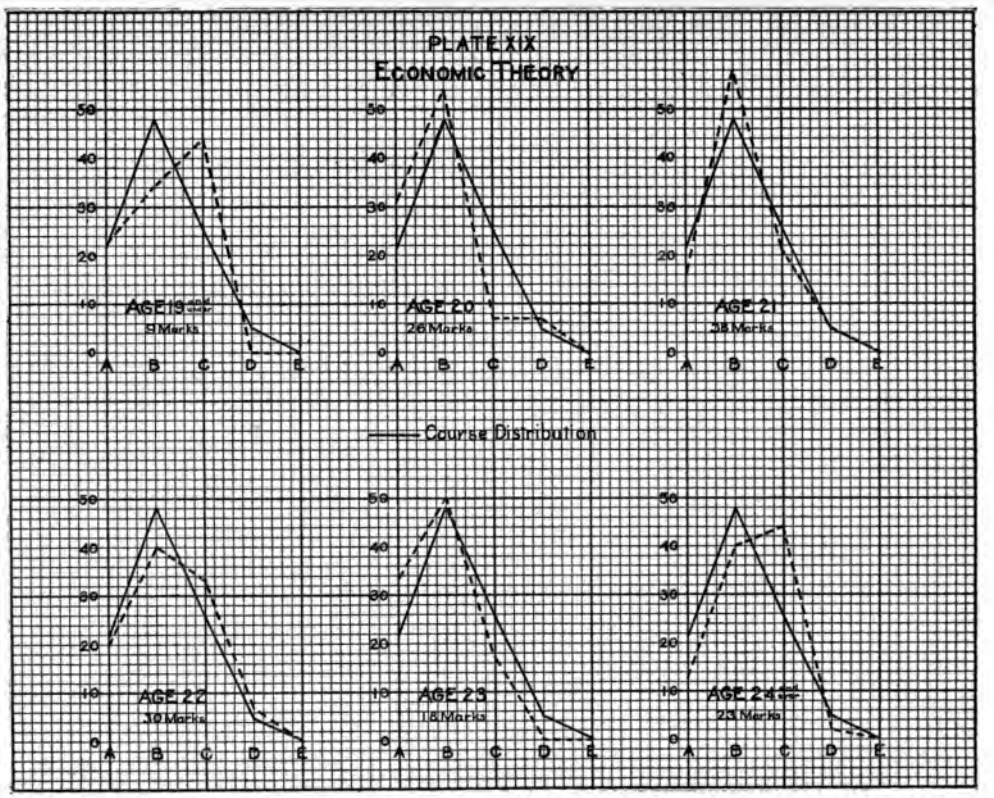


PLATE XIX
ECONOMIC THEORY
AGE 19
9 Marks
AGE 20
26 Marks
AGE 21
38 Marks
Course Distribution
AGE 22
30 Marks
AGE 23
18 Marks
AGE 24
23 Marks
A B C D E

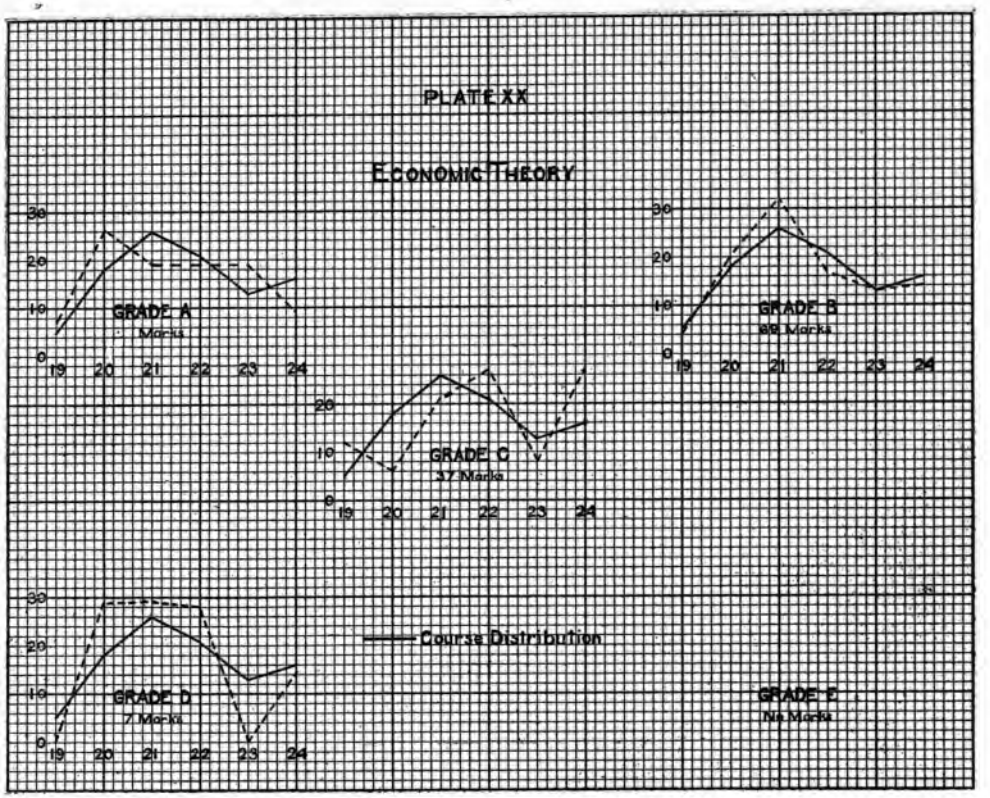


PLATE XX
ECONOMIC THEORY
GRADE A
Marks
GRADE B
89 Marks
GRADE C
37 Marks
GRADE D
7 Marks
GRADE E
No Marks
Course Distribution
0
10
20
30
19
20
21
22
23
24

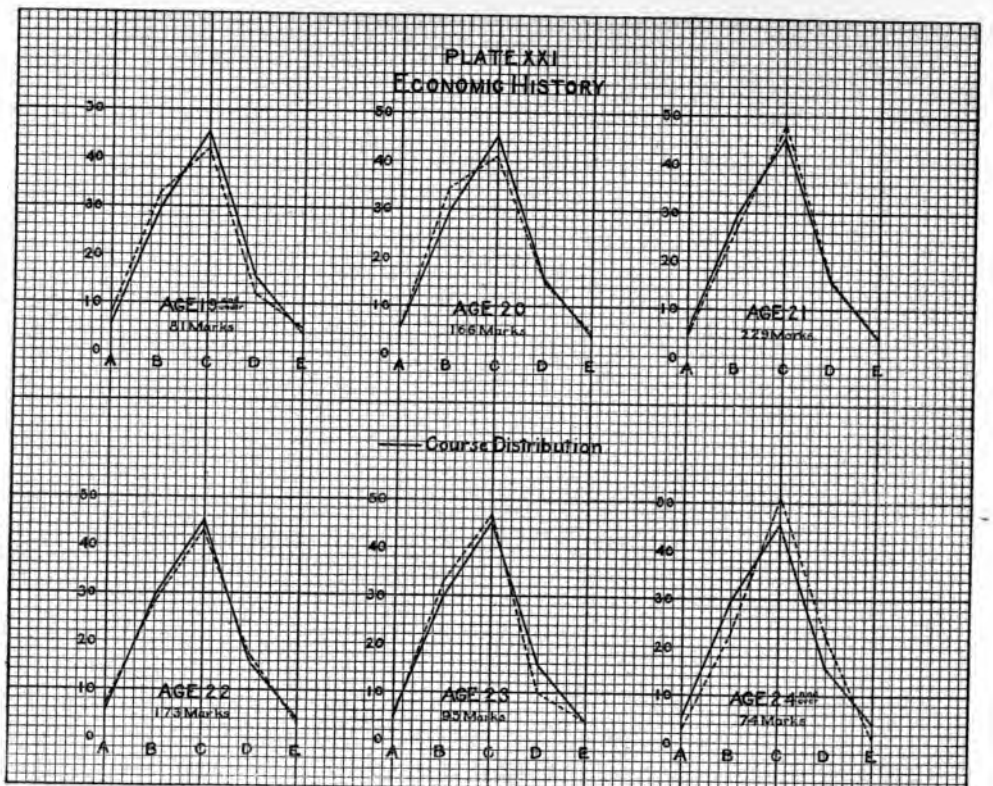


PLATE XXI
ECONOMIC HISTORY
AGE 19
51 Marks
AGE 20
166 Marks
AGE 21
229 Marks
Course Distribution
AGE 22
173 Marks
AGE 23
92 Marks
AGE 24
74 Marks
A B C D E

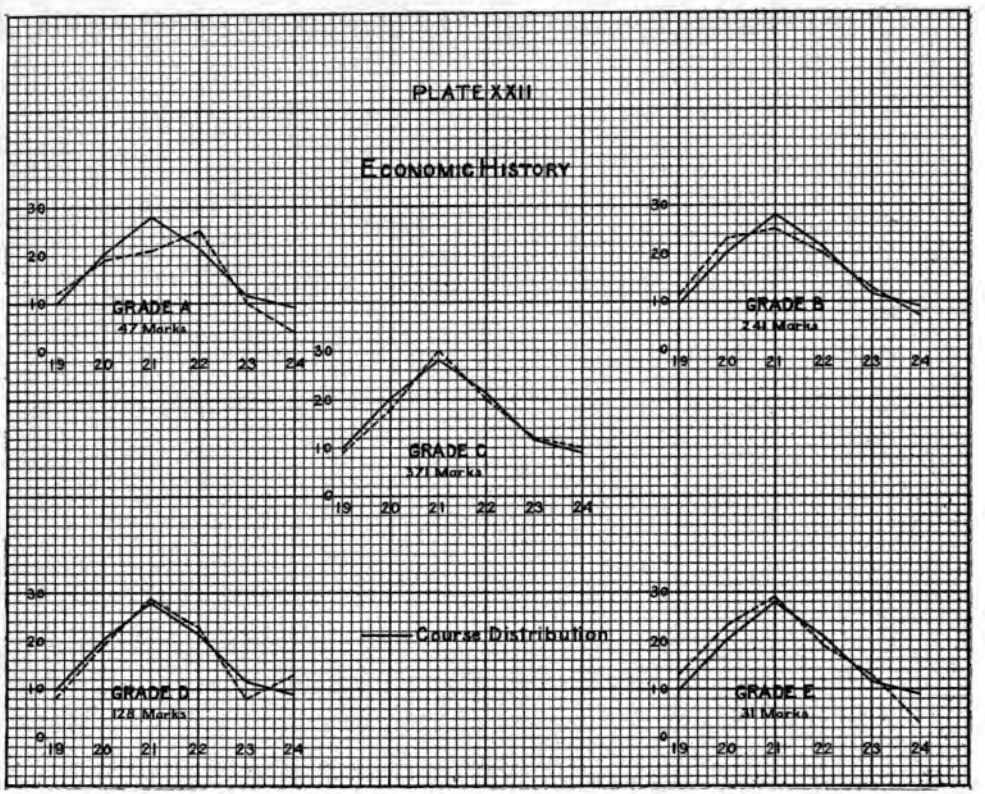


PLATE XXII
ECONOMIC HISTORY
GRADE A
47 Marks
GRADE B
241 Marks
GRADE C
371 Marks
GRADE D
128 Marks
GRADE E
31 Marks
Course Distribution
0
10
20
30
19
20
21
22
23
24

not to try Economics 11 until a year or two later. Youth, in fine, is not of itself a handicap, and a young man who does well should never be passed by for academic honors or encouragement in favor of another who is his superior solely in years. Even the mature man who has gained in seriousness by several years out of college is likely to be less successful than the younger man who has never grown intellectually "rusty."

CHAPTER IV

MINOR STUDIES AND PROPOSALS FOR EXPERIMENT

I. Habits of Study in Economics A and Other Courses

Habits of study among college students are often the subject of discussion and comment, more or less serious, and every one knows, from his own experience and observation, more or less about them; but no conclusions or proposals concerning study, as the chief duty of college men, have ever been based, so far as we know, on a plain record of the actual practices of the students. This part of the Inspection is based on a record of that kind — a record which might, indeed, be more extensive, but which is reliable as far as it goes.

A member of the Division of Education presented to a section in Economics A and to a few other groups of students a request for records of all their studying from December 10, 1913, to the end of January, 1914. The general purpose of the records was explained, although without reference to this Inspection; and the students were urged not to volunteer to supply records unless they were really interested in the problem under consideration and could promise to make their records complete. Seven men from the Economics A section volunteered and fifteen men from other courses, one of whom, a Junior, was taking Economics 2 a. The fourteen men from courses in departments other than Economics did not all hand in records of study for their full list of courses, so that this study is based on the eight

sets of records from Economics students, although the comments of the other students are also used in the brief final discussion. There was no attempt to make this study statistical in the sense which implies the counting or averaging of a large number of records. It was a study of a few selected cases, for the sake of securing sets of records limited in number but complete in character.

As will be seen from the following record of marks, the men were not brilliant; but all were faithful and serious in their attitude.

MID-YEAR GRADES — 1913–14

Student	Economics A	Other Courses
1	D+	English 2: B. Philosophy 1: C+. French 3: A−
2	D+	Classical Philosophy 66: B−. History 10a: B. Comparative Literature 9: A−. English 24: C−. History 14: C−.
3	D−	English 27: C. Latin 10: C+. Music 4: D. Social Ethics: 4: B−. Music 3: B−.
4	C+	English 22: C. English 2: D. Physiology 1: B.
5	C+	Engineering 3: B+. Mathematics 5: B+. Engineering 41: B+. Physics 1: A.
6	C	French 9: B−. Comparative Literature 1: C. Spanish 5: C+. Government 17: C.
7	B	Chemistry 3: B. Mineralogy 2: B. Geology 8: A−. Geology 10: A.
8 (Ec. 2a)	C	German A: C+. History 30a: C. History 16a: B. Education A: A.

The following letter and sample record slip was sent to each of the volunteers.

CAMBRIDGE, December 8, 1915.

MY DEAR MR.

You are among those who gave me their names in response to my recent request for coöperation in securing accurate records of the study habits of college men. I take for granted, after what I said at that time, that I may now rely on you for a serious and faithful effort to supply me with the data I am seeking. Let me repeat the assurance that the facts you record will be used only impersonally, as a basis for general conclusions, and without the slightest reference to the name of the recorder. Your own records will be open at any time

to your inspection, in 5 Lawrence Hall, and I shall be glad to confer with you, if you care to have me, on your methods of study or on any educational questions which this record may suggest to you.

You will find enclosed slips on which the records are to be made. In making your records please observe very carefully the following points:

I. Make a separate record for each distinct "piece" of study. That is, if you turn from one topic to another in the same course, or from one kind of work to another in the same course, or from the work of one course to the work of another course, make a separate record for each.

II. Record every piece of study immediately at the completion of it, or as soon thereafter as possible. The purely mechanical details of the record may be set down at the beginning of the study, and the rest filled out at the end of it, with the expenditure of very little time.

III. Be absolutely frank in filling out the records. The back of the slip may be used for comment, if the space allotted on the front of the slip is not sufficient.

The enclosed slips need very little explanation. You will find one of them filled out as an example. Please let me know at once if you discover any difficulty in filling out the slips. You may find me in Lawrence 5 any day at eleven, or you can reach me there by telephone or mail. The enclosed slips are intended to cover the work of a week. I will mail to you a similar set of slips every week. The addressed envelope with the slips is for the return of the week's records. Please mail them on Saturday so that I may receive them Monday morning. Your first set of records should be mailed Dec. 13.

Under the heading "Material" please give the exact pages covered in your study when this is possible; if not, record in some way the extent of the material you used. Please note that laboratory work and field work should be covered in these records. In such cases make a brief statement, under the heading "Material," of the *character* of the work. A piece of mechanical drawing in an Engineering course; an experiment in a Physics course; a laboratory test in a course in Chemistry; a visit to an institution in a course in Government; these are all examples of forms of study, the character of which should be recorded under the heading.

It may also happen that the work to be recorded will be writing, or organizing material for writing. These facts should also be noted under the heading "Material."

Under the heading "Purpose" please state whether the work is

done under the general requirements of the course, as a part of the regularly assigned reading, in special preparation for a set examination, or for any other particular purpose.

Under "Method" record simply the outstanding facts as to your procedure. If you memorize headings or take notes on reading, or just read straight ahead without pausing to organize the material, or work over material you studied into a special form of organization for your own purposes, please indicate the fact briefly in your record.

Under "Comment" please put down in any case your own reaction as to the value of the time you spent. If you feel sure that you have grasped the material and can remember it, use the term "satisfactory" or some similar term. If the work required seemed useless to you, if you found no profit in the book you were studying, if the work you did confused rather than clarified your ideas — please make an appropriate record. Under this heading I should be glad also of indication of interruptions or distractions which you encountered in your work.

With the hope that your coöperation in this study will yield something to you as well as to others, I am

Very sincerely yours,

Sample Slip

Name: Doe, John H. *Course:* Economics A.
Date: 6 Dec., '13 *Hours:* 3:30–4:30 *Place:* Upper Mass.
Material: Taussig: Prin. Econ., Ch. 32, pp. 449–467. Chapter on Foreign Exchanges.
Purpose: Regular weekly assignment.
Method: 1st reading for general impression; then outlined by sections and paragraphs. Spent 10 minutes memorizing a summary, and 20 minutes thinking out typical cases.
Comment: I understand the chapter, but need opportunity to follow the details of exchange as actually practised.

The several sets of record were summarized, both for the more mechanical matters and for methods, comments, and general impressions, as shown in the following example:

Set 1

(*a*) Number of records submitted — 119.
(*b*) Time spent in study:

Economics A . Study, on 16 different dates, amounting to 52 hours.
English 2 . . . Study, on 20 different dates, amounting to 58 hours.

French 3 . . . Study, on 12 different dates, amounting to 39 hours.
Philosophy 1 . Study, on 12 different dates, amounting to 30 hours.

(*c*) Places:

Economics A . College room (Stoughton), 13 periods; Massachusetts Hall, 9 periods; home, 2 periods; Pi Eta Library, 1 period.
English 2 . . . Massachusetts Hall, 19 periods; college room, 8 periods; home, 8 periods; on trains, 3 periods; in dining hall, 1 period.
French 3 . . . Home, 36 periods; Pi Eta Library, 9 periods; college room, 6 periods; Massachusetts Hall, 4 periods.
Philosophy 1 . College room, 15 periods; Massachusetts Hall, 9 periods; Pi Eta Library, 4 periods; home, 1 period; on trolley cars, 4 periods.

(*d*) Purposes:

Economics A . For midyear examination, 12 periods.
For weekly assignments of reading, 11 periods.
For review preparatory for section meetings, 2 periods.
English 2 . . . For midyear examination, 24 periods.
For lesson of succeeding day, 11 periods.
For fixing memory passages, 4 periods.
French 3 . . . For midyear examination, 7 periods.
For lesson of succeeding day, 9 periods.
For review of preceding lesson, 6 periods.
Philosophy 1 . For midyear examination, 29 periods.
For supplementary and advanced reading, 2 periods.
For making up lecture lost, 1 period.
For section meeting, 1 period.

This man studied every day from December 10 to December 18 inclusive, and from January 6 to February 7 inclusive. He scattered his periods of study throughout the day, from 8 A.M. to 2 P.M., but studied more from 1 to 5 P.M., and from 8 to 12 P.M., than at other hours. Some of his periods of review for midyears were long — one day of "cramming" for Economics A including an hour and a quarter in the morning, four hours in the afternoon, and five hours in the

evening. The commonest length of his periods was an hour. He often recorded periods of ten or fifteen minutes. On one day he spent five hours at different times on assigned reading in Economics A and remarks, "Toward the end my brain seemed tired of Economics, and while I could pick out the point, it did not seem as vivid." Several records note that study late at night "after a symphony concert" is "unsatisfactory."

His method of study in Economics A was good: he read the whole chapter or section first for a general impression, and reviewed it paragraph by paragraph to fix details. Acts and scenes in *Henry IV* for English 2 he handled in the same way. His method of memorizing for English 2 was more doubtful: he memorized two or three lines at a time, adding them to what he already knew. In Economics A he committed outlines to memory and he took notes on all his reading in Economics and Philosophy. In French he made full use of the dictionary, recording such work as "tedious" but noting the pleasure he secured afterwards in rapid rereading of the text. He seldom went over any assignment less than twice, often covering a difficult assignment three times. Once he records that in taking notes he "made an extra effort to use his own language and seemed to get more out of it."

This man's records give a clear impression of faithful effort spent almost wholly in *memorizing*. He never discussed problems in Economics or Philosophy with himself or — so far as his records show — with others. His study was bookwork — learning what the text and his reading notes and his lecture notes presented. He never records the least dissent from what he read, although he sometimes found it "dull"; nor does he record any enthusiusm higher than "interest." His chief desire, in his own phrase, is to "get a firm grip on the material."

The other sets of records may best be summarized more briefly.

Set 2

Number of records submitted — 131.

This man studied daily form December 10 to December 18, read much during the vacation and studied daily from January 5 to February 6; but he often studied in short periods of ten, fifteen, or twenty minutes, on one occasion turning from one subject to another and back again in the course of an hour. He studied mostly in the late afternoon and evening. His longest period of consecutive work on one subject was four hours and a half in History 10 a. His study was continually interrupted and very often casual and hurried.

There is little to indicate any fixed method, either in general or for any particular course. He often records thinking about the subject before beginning his work, and he usually marked or reread significant passages. Once he records marking the topic sentences in all the paragraphs in a long chapter assigned in History 14. A very common remark is to the effect that he got a few good points but no unified impression. Much of his study has reference to written work in preparation, the subjects of which he had constantly in mind. Apparently he did considerable thinking as he studied, retaining of what he read chiefly the material which wove itself into his own thought. On the occasions when he found time for review, he notes especially the striking improvement in his understanding of the passages as wholes. He notes occasionally his disagreement with the author he is reading.

This set of notes shows much greater activity of mind on the part of the student than does the first set. He estimates values, organizes materials for use, and picks out ideas which interest him. But he works erratically and does not wrestle

with problems or cases in point. Economics as a subject seems less congenial to him than other subjects, for in Economics he suffers more from his tendency to "browse" in the subject rather than to concentrate his attention on a connected series of problems.

Set 3

Number of records submitted — 71.

This man studied in periods of considerable length, concentrating on single subjects. He worked daily from December 10 to February 6, omitting Sundays and the full Christmas vacation. One record shows study in Social Ethics from 1:30 P. M. to 6 P. M. and the next record shows study in the same subject that evening from 7 P. M. to 2 A. M. This was reading and writing for a thesis and is recorded as "intensely interesting work." Periods of two and three hours are common. The work fell more often in the afternoon than in the evening.

His method in Economics "is always the same: reading for impression, then making a brief." In general, he found his reading in Economics easy and sometimes interesting; but he evidently did it somewhat perfunctorily. His work on *Immigration* in Social Ethics 4 fascinated him. In this course his mind was generally active: he prepared for the examination by "considering possible questions and making answers for them," a method which might seem like the most mechanical "cramming" if it were not for the evidence of the other records, which show that he was thinking for himself in the subject. His mark in the Course, (B–), the highest he received, reflects this. In preparation for Economics A he read his notes through once and memorized diagrams and topic headings.

His records give a general impression of application faithful enough, but never intensive except where personal

interest is aroused in connection with a piece of constructive work. He is content to understand what he reads, without any strong purpose to possess it, still less to ponder it as a matter of real concern — unless he can use it as part of his preparation for a theme or thesis. He is the sort of man who can best be awakened mentally by the pressure of a practical problem or task, seldom by the mere exposition of fact or theory in book or lecture.

Set 4

Number of records submitted — 75.

In Engineering Sciences 16 and Mathematics 2 b, both courses in which this student was registered during the *first* half of 1912–13 and the *second* half of 1913–14, he spent 14 hours of study, in all, from December 10, 1913, to February 6, 1914. His final grade in Mathematics 2 b was C−; in Engineering Sciences 16, A. In Mathematics C and Physics 1 he helped a friend four times, aggregating about 3½ hours.

Student 4 spent much less time in study than Students 1, 2, or 3. He did no studying on seventeen college days during the period from December 10 to February 7, except for certain "outside" work during the Christmas vacation: thus he lost about 20 days out of 56. He sometimes studied early in the morning — on one occasion from 5 to 8; and often he studied in the forenoon between 9 and 1. His longest consecutive study came in the evenings, often between 10 P.M. and 1 P.M., but in general his periods were short — usually half an hour or less.

In Economics he just "reads," remarking once that the material is "interesting," but that he "will rely in the test more on his own reasoning than on the words of the text." He worked out voluntarily a few numerical solutions for economic problems and found it "useful drill." Also he records "thinking out applications of the principles" pre-

sented in the text. Anything in mathematical or scientific form appeals to him, but in writing English themes his thoughts "do not come freely." In English 2 he found "writing out passages a great help in memorizing." In English 22 he "gets started" slowly, only once recording rapid work on a theme, when he wrote "an indignant attack on a theme read in class." He always carefully rewrites themes, but never takes notes on reading. He records that in beginning a book he always reads it through hurriedly first "for a general impression."

This student's mind works practically: he does best in the face of problems, objects, figures, examples; and in discussion and exposition. This is indicated by such records as the following:

Date: Week of Dec. 29. *Hours:* 3:00–11:00. *Place:* B. & W. Power Station.

Comment: I derived great benefit from this vacation work which will help me in my Engineering. I was able to see the application of what I had learned in class. I found out a great many new things for myself and freely asked questions. The engineers were very kind and showed me what they could. I picked up a good idea of the general routine work and repair work. It was of much more value than a week's work in class. I learned a great deal which is never mentioned in class. One oiler trained me on examination questions. I spent some time computing data about the engines.

The contact with the men was of great profit as I believe that it is important for an engineer to know how work looks from the workman's point of view.

If you wish I would gladly report on other vacation work I have done which has helped me.

Date: Jan. 5, '14. *Hours:* 11:15–12 M. *Place:* 53 Dunster St.

Material: Carhart's College Physics. Chapter on calorimetry.

Purpose: Helping a friend prepare for exam.

Method: Working and explaining problems.

Comment: Helps me to keep my hand in on work that I have finished and which I shall need in my Engineering. It is my habit to spend time helping my friends. I shall report that until you request only my own work.

Date: 1/8/14. *Hours:* 10:15–11:00 P. M. *Place:* 53 Dunster St.
Material: Carhart's College Physics. Calorimetry. Dew point, Triple point Humidity.
Purpose: Helping a friend.
Method: Explained the text and enlightened dark places. Assisted with the problems by giving hints and suggestions, also made sure that he understood principle.
This work refreshed my memory of physical constants. Also it was good practice in exposition and clearing up misunderstanding. The Triple point was also new to me. I had to catch on to the ideas and explain after one reading of the text. Trains mental alertness.

Date: 1/3/14. *Hours:* 2:00–2:45 P. M. *Place:* Room.
Material: Original thought.
Purpose: Request from railroad fireman for explanation of "Linking up."
Method: Developed engine cards from Zenner diagram; plotted work cards and torque of locomotive through complete cycle.
Comment: I find original work like this often of much more value than class work. It is good practice in deduction from apparently unrelated facts. It develops reasoning power and confidence that when I do strike a problem that is not taken up in any text book I have seen, I stand a good chance of solving it. This increases resourcefulness. The results are often of great help in class and at work.
(Note): Do you wish work that falls in no course to be reported?

Date: 1/10/14. *Hours:* 11:00–11:15 P. M. *Place:* Home.
Material: Original thought.
Purpose: Proof that a three-phase current could be transmitted over three wires.
Method: Derivation of formula.
Comment: Very useful training. Makes me more independent of the text book. The suggestion came from a diagram of a three-phase current and three-phase transformer. The result is that I have a clear conception of what such a current is which I never shall forget.

Date: 1/12/14. *Hours:* 9:00–10:15 P. M. *Place:* 53 Dunster St.
Material: Class problems in projection of one line on another in space.
Purpose: Helping a friend.
Comment: Very good training and think quickly in working out problems. Knocks the rust off of my analytic geometry.

Date: 4/5/14. *Hours:* 9:00–12:00 M. *Place:* Westmoreley 106.
Material: Friend's notes.
Purpose: Exam.
Method: Mutual explanation.
Comment: I think this a very good way to prepare for an exam. Seminars of two or three should be gathered together to talk.

Set 5

Number of records submitted — 80.

Student 5 missed seventeen days out of 46, including eight days in the Christmas vacation. He used every hour of the day, from 8 A.M. to 1:30 A.M. His periods of study are of reasonable length, ranging commonly from three-quarters of an hour to two hours.

This student was more intelligent and thoughtful than diligent. His comments show independence and critical power, but he does not do his work with great care or persistence. In Economics he "reads once" and "thinks over the important points." In Mathematics and Physics he works with a friend, doing problems, comparing notes, and asking or answering questions. In English he gets clear impressions from a single reading. He is frank in his criticism of books and chapters but takes the easiest way in study.

Set 6

Number of records submitted — 34.

This student missed 27 days out of 44, including the whole period (17 days) between December 18 and January 5. He studied in the afternoon and evening, seldom in the morning. His periods are most often only twenty or twenty-five minutes in length.

He slights Economics most, often reading a chapter in ten minutes. In reading he takes notes when he has time. He has no conscious method of study except in Spanish, in which he visualizes sentences in composition and learns one

sentence at a time in that way. His comments show that he takes study without much thought: if he understands at first reading he calls the period "satisfactory"; if not, he remarks, "Too difficult, so gave it up."

Set 7

Number of records submitted — 30.

Student 7 missed only two days, except for the period from December 19 to January 6, during which he did not study. He always studied in periods longer than an hour, usually for at least two hours — but many of these periods were in the laboratory.

In Economics he reads hastily, and records that "it needs to be done over again." In other courses he tends to hurry, but checks himself, starts over again and goes more slowly. When he has objects or diagrams or specimens before him he is satisfied with his results, seldom otherwise. On one slip he remarks, concerning "original data on Coral Reefs of the Philippine Islands" of which he made a topical outline, "Fair. But I would like to return to the Philippines and see the reefs again!!" He is not conscious of his methods, but does his work steadily, in the handiest way.

Set 8

Number of records submitted — 98.

During a period of 68 days this student did no studying on 23. (He was a married man, although an undergraduate.) He often studied from 5 to 6 in the morning, and in general did most of his work in the forenoon, none after 11 at night. Most of his periods are half or three quarters of an hour in length, although on the paper in Education A he worked continuously for six hours, and on his thesis for History 16a for four and a half hours.

Student 8 was by far the most self-conscious in his studying, of the men in this group. He tried various experiments — reading aloud, listening to reading aloud, abstracting before study and after study, choosing topic-words for a set of cards to be run over at odd moments, making digests of notes taken by another man, testing his memory of topics chosen at random, thinking carefully on selected problems, visualizing vocabularies, etc. His best results came from the time he spent on organizing materials in outline form and fitting illustrative details under appropriate headings.

These records give strong support to a common impression, namely, that college students are engaged for the most part in preparing for examinations, tests, and papers and *seldom look beyond these immediate objectives.* The questions with which lectures and text books deal *are not real to them.* Their practical business at the moment is to "pass the course." Any and all methods and devices which can be used to make them feel the reality and significance of the problems they are studying ought to be adopted, even at great risks.

As to methods of study, the records show that students are largely innocent of any knowledge of the different requirements of different tasks. They seldom think out cases, problems, exceptions, contrary positions, applications, or corollaries. They try to understand, fix the material in mind, pick out the important points. Instruction in study is needed and specific directions for particular pieces of work.

The evidence in this section agrees admirably with the evidence from the questionnaires, from our visits, and from other minor studies in supporting the general conclusion that there is great and unnecessary waste of time in college work. Much of it could be prevented by more careful attention on the part of instructors to the problems of teaching as such — not merely to modes of presentation in

class, but to the *guidance of individuals* in their learning. To make this possible, however, the University must first change its method of estimating the work a teacher ought to carry. The only just way to determine the burden of an instructor who is to work individually with his student is to use as a unit the "student-hour," with such adjustments as the varying character of courses may suggest.[1]

II. Preparatory Questions in Economics A

This section reports the only experiment in method in which we were able to secure quantitative returns of any sort, and in this case we should have been glad to conduct a more elaborate experiment to test the conclusions here reported. The other experiments we hoped to carry out, on two of which work was begun, are discussed in the following section. The experiments are reported not to present results of value in themselves, for they yielded none; nor to exemplify method in any of its refinements, for our method was only generally sound and the results should have been checked in a number of ways; but to show the possibilities of experiment and the kind of questions it can be applied to.

Professor Day had had in mind for some time the possible advantage of giving to students in Economics A questions and problems to be considered in advance of the reading, without any requirement of written reports on them, the questions being intended simply to sharpen the students' interest in their subsequent study. The results of this experiment were taken to support the use of such questions, and Professor Day and Dr. Davis later published their

[1] See Birge, E. A. "How Many Hours a Week Should be Required of Teachers in a University?" *Transactions and Proceedings of the National Association of the State Universities*, v. 14, 1916.

volume of *Questions in Economics* in order to continue the policy. In 1913–14, preparatory questions were used in all sections of Economics A, and it was proposed in that year that after December 10 the use of these questions should be omitted in all but a few selected sections for the sake of testing in a new way the effect of their use. It was also proposed that the relative advantages of "scientific" and "popular" questions should be tested by using the latter with certain sections and the former with others. These proposals, however, could not be carried out satisfactorily, owing to lack of time.

The following report on the methods and results of this experiment was presented at the joint conference on October 29, 1913.

Method and Results in an Experiment with Preparatory Questions in Certain Sections of Economics A, 1912–13

In Economics A, the assigned reading is given out at the Saturday lecture. In the section meetings of the following week (Monday to Friday), the reading thus assigned is discussed. Each lecture covers the ground of the reading assigned on the previous Saturday. At the first section meeting of the week, a twenty-minute test on the reading and the lecture of the previous week is given.

It seemed clear that a list of questions, given out before the assignment of the reading and designed to stimulate the curiosity and challenge the interest of students, might make their reading more profitable and their comprehension and memory of it and of the lecture more complete. Such questions would constitute a device to be used in preparing the minds of the students for the facts and conceptions presented in the reading and the lecture, and in arousing and directing their attention. Professor Day suggested that such questions be given out in certain sections and not in others, beginning in February, 1913, and that the records of sections with which the experiment was tried be compared with the records of the control sections throughout the spring and on the final examination. The results presented below show that in most cases the preparatory questions were of some profit in the preparation of the weekly papers; but the returns from the final examinations are variable and incon-

clusive. A few shiftings from section to section late in the second half year account for this in part; and the fact that the results in the examination differ so markedly from the results in the paper shows how sharply examinations and daily work are separated. It will be noted, however, that it was only Section M which forged ahead of its competing "favored" sections — a fact for which we found no explanation. The general experience of the two instructors who used these questions was in favor of them, and a number of students expressed their interest in the questions and their belief that they had been helped by them.

The character of the questions used may be seen from the following examples:

1. Rents in Harvard Square are lower than on Washington Street in Boston. Would you expect prices for the same articles to be less at Harvard Square? Why or Why not?

2. Is the existence of a leisure class supported from economic rent socially justified? Do you find any valid objections to state appropriation of all such rents?

3. Wherein are rent and monopoly gains alike, wherein different?

4. The total annual rental of a house and lot is $5000. The value of the house is $40,000. Repairs, depreciation, and insurance cost $1000 yearly. If the current rate of interest on investments of equal security is 5 per cent, what is the value of the lot?

5. Is the spendthrift a public benefactor, in that he increases the demand for labor?

6. What is meant by the "discounted marginal product of labor"?

7. What is the cause of the declining birth rate in advancing countries? Would this cause operate under socialism?

8. Are the rich becoming richer, and the poor, poorer?

9. Can trade unions increase general wages?

10. What is meant by "charging what the traffic will bear"? Would you expect the railroad rate on a ton of copper to be higher or lower than the rate on a ton of coal? Why does an express company charge no more for carrying 25 lbs. of books than it does for carrying the same distance at owner's risk 25 lbs. of table silver?

11. Enumerate all the public service industries you can think of. Will the distribution of milk ever become a public service industry?

12. What is unfair competition? Is the following unfair competition? — To refuse to sell to any retailer who will carry rival lines of goods?

PROFESSOR DAY'S SECTIONS

	Sect. E	Sect. K	Difference	Favorable effect of Prep. Questions
Mid-Year Examination .	60.4	65.3	4.9	
Paper	68.2*	70.9	2.7	2.2
"	68.8	75.9*	7.1	2.2
"	71.6*	73.3	1.7	3.2
"	75.5*	76.8	1.3	3.6
Average	71.03	74.23	3.2	2.8
Final Examination . . .	69.9	73.5	4.6	.3

* Given preparatory questions.

MR. BURBANK'S SECTIONS

	Sect. D	Sect. M	Difference	Favorable effect of Prep. Questions
Mid-Year Examination .	62.6	59.1	3.5	
Paper	70.1	65.5	4.6	1.1
"	58.5	56.7	1.8	1.7*
"	65.7	63.2	2.5	1. *
"	72.6	68	4.6	1.1
"	69	64.7	4.3	.8
"	73.2	68.1	5.1	1.6
Average	68.18	64.37	3.82	.32
Final Examination . . .	68.04	71	2.96	6.46*

In each case the preparatory questions were given to Section D.

* Unfavorable

MR. BURBANK'S SECTIONS

	Sect. G	Sect. P	Difference	Favorable effect of Prep. Questions
Mid-Year Examination .	60.3	65.3	5	
Paper	69.3	70.1	.8	4.2
"	56.7	58	1.3	3.7
"	69.2	68	1.2	6.2
"	70.1	73.8	3.7	1.3
"	67.5	73.1	5.6	.6*
"	72.6	71.8	.8	5.8
"	70.3	69.7	.6	5.6
Average	67.96	69.21	1.26	3.74
Final Examination . . .	67.15	70.44	3.29	1.71

In each case the questions were given to Section G.

* Unfavorable.

MR. BURBANK'S SECTIONS

	Sect. D	Sect. P	Difference	Favorable effect of Prep. Questions
Mid-Year Examination .	62.6	65.3	2.7	
Paper	70.1	70.1	—	2.7
"	58.5	58	.5	3.2
"	65.7	68	2.5	.2
"	72.6	73.8	1.2	1.5
"	69	73.1	4.1	1.4*
"	73.2	71.8	1.4	4.1
Average	68.18	69.21	1.18	1.72
Final Examination . . .	68.04	70.44	2.4	.3

In each case the question was given to Section D.

* Unfavorable.

MR. BURBANK'S SECTIONS.

	Sect. G	Sect. M	Difference	Favorable effect of Prep. Questions
Mid-Year Examination .	60.3	59.1	1.2	
Paper	69.3	65.5	3.8	2.6
"	56.7	56.7	—	1.2*
"	69.2	63.2	6	4.8
"	70.1	68	2.1	.9
"	67.5	64.7	2.8	1.6
"	72.6	68.1	4.5	3.3
"	70.3	69.2	1.1	.1*
Average	67.96	65.57	3.38	1.7
Final Examination . . .	67.15	71	3.85	5.05*

In each case the question was given to Section G.

* Unfavorable.

Average favorable effect on the papers, 2.81 in 24 cases.
" unfavorable " " " " 1. 6 cases.
" favorable " " " final examination, .77 in 3 cases.
" unfavorable " " " " " 5.75 in 2 cases.

The results of this experiment were not in themselves convincing as to the advantage of preparatory questions, yet they have some weight in corroboration of the general observation and opinion of the instructors. The only possibility of systematic error in the marking lay in the temptation which the instructors might have felt to give

higher marks to the students in the sections using preparatory questions. But the marks on the papers and on the final examinations were not given, of course, to the students of the various sections as groups, but as individuals, and it seems unlikely that any unconscious tendency to mark the students of one section higher than those of another could have exerted an influence strong enough to overcome conscientious effort to assign marks accurately. For the comparisons, a broader basis than the average standing of sections in the mid-year examinations should have been secured; and the preparatory questions should have been used for a considerable period with one section and then with the other.

III. Proposals for Experiment in Method

The first proposal for experiment in method was made in February, 1913. Economics A was then concerned with the subject *Interest*, and it was agreed that in one section the students should omit reading the passages in the text and instead look over the financial sheet of the morning paper to find the rate of interest and what quotations give the clearest indication of it. On the basis of this more or less practical contact with the facts of the matter, discussion was to bring out the principles necessary for a completer understanding of the topic. In another section the usual procedure was to be followed, and the performances of the two sections on the subsequent class paper were to be compared. The more inductive procedure, starting from the study of facts presented in a way already partly familiar to most of the students, might, it was thought, yield better results by arousing greater interest and attention. The results of this experiment were to be combined with the results of similar experiments with inductive teaching, in

each case a "control" section giving the necessary basis for comparison. Unfortunately, a mistake in the assignment of the work made it impossible to compare the performances of the two sections on *Interest*, and the experiment with preliminary questions took most of the time we could give to this phase of the investigation thereafter.

The next fall, however, an attempt was made to conduct an experiment in the learning of a set definition. At a conference of instructors and assistants in Economics A, it was agreed that three of the men in charge of sections should attempt an experimental determination of the value of the careful learning of a fixed definition. Each of these instructors agreed to teach the definition of *Marginal Utility* in certain sections and not in others. The procedure agreed upon was as follows: The general conception was to be discussed in class in the usual fashion by question and answer, but before the close of the hour the instructor was to ask for the definition of *Marginal Utility*, and this was to be put on the board. The definition as given was to be criticized and corrected and the definition agreed on by the instructors was to be substituted on the board for any less adequate definition suggested by the students. The definition as prsented by the instructors was to be learned by heart by the students and their exact recall of it tested in a subsequent section meeting. The advantage of this procedure was to be compared with the advantage of teaching this topic without the learning of a set definition, by means of a question to be answered in the fall hour-examination. This experiment failed because the instructors did not succeed in saving time enough for the teaching of the definition. Only one found himself in a position even to report his results.

Experiment in college teaching demands a great deal of time and close attention to detail. There are so many

possibilities of error, means of control are so difficult to apply, and conclusive tests so hard to devise, that some experience, to say nothing of time, energy, and purpose, is necessary to carry an experiment to a profitable conclusion. We believe this can be done, however, and that in many cases in which the value of a particular method is in dispute it would pay to attempt it. There is no good ground, to be sure, for the hope that experiment in this field can be made so exact as to banish forever all possibility of difference of opinion. The complexity of the action to be controlled, the impossibility of eliminating hidden factors, and the barriers to observation of results are all such as to make dubious the expectation of final conclusions based solely on experiment. Yet the *effort to secure returns more exact than those of unrecorded and unchecked observation* cannot but yield a valuable result. It will at any rate sharpen observation and concentrate attention on problems of teaching which are now too often entirely ignored. It is evident that the arrangement of sections in Economics A offers a particularly good opportunity for exact comparison of the results of different modes of procedure in the class room. Many of the policies and devices contained in the list of Section II of the chapter on Method might be tested by controlled experiment in these sections. We would suggest as especially profitable fields for experiment in method the following:

(1) The use of devices other than preparatory questions for arousing interest and curiosity in advance of class discussion, reading, or the lecture on a given topic. Discussion in class and the assignment of reading in current newspapers and magazines might bring even better results than the use of printed questions.

(2) The presentation in class of the materials and at least the beginning of the process of memorizing them under

the direction of the instructor, in cases where figures, graphs, terms, etc., are to be learned from visual impressions.

(3) The use of reports from students, brief debates, questions and problems framed by the students, and other devices for securing participation by the class as a means of assuring complete understanding of a generalization, principle, or complex situation, with which the class should be made thoroughly familiar.

(4) The use of at least one practical project or investigation of considerable extent in the course of the year as a means of giving to students a fuller understanding of the nature of economic facts and principles.

IV. Proposal for a Fundamental Test

One of the first proposals of the Inspection was the formulation of a general test by which growth in ability to handle economic data and solve economic problems might be measured. It seemed to us not impossible to secure a set of questions, or better still, several alternative sets, comprehensive enough to cover most of the main fields of economic inquiry and difficult enough to test the ability of advanced students, yet presenting problems of such common interest and general importance that even the beginner might attack them with some measure of comprehension. Such a set of questions could not be used, of course, as an ordinary examination, since the answers to them might be learned in advance if it were known that they were to be given more than once. A test of this sort would be useful only as a measure of the increase of general ability in the subject resulting from any given amount of study of economics or any particular phase of it. It would be essentially an instrument of investigation.

Obviously, the questions to be used in such a test would

have to be tried first in section meetings or examinations in several of the courses in order to discover their availability for this particular purpose. Questions which could be answered with complete success by a large proportion of the students at the end of the introductory course would not be suitable, nor would questions too difficult even for relatively advanced students. Questions to which the answers would necessarily be overlong and hard to grade would not do; for an essential requirement of the test would be that returns from it could be graded with considerable accuracy. For this reason, and also for the obviously necessary purpose of excluding problems on which economists are still too largely in doubt, it would be necessary to exclude questions which could not be carefully analyzed for the accurate grading of answers. These requirements make the formulation of a fundamental test a time-consuming and difficult task. We could not delay the other phases of the Inspection in order to secure a large number of questions and to prove their value for this purpose. In consequence, only one question was tested by giving it in a section meeting in Economics A and again in the final examination. Professor Day, however, handed in a number of questions which he considered promising for use in the test, and some of these are presented here, together with the results of the two examinations in Economics A, on which the first question was set.

The character of the questions submitted by Professor Day as possibly suitable for a fundamental test may be seen from the following examples:

1. To what extent and in what manner do the following contribute to the formation of capital: a miser; a postal savings bank; a life insurance company; government borrowing; a manual training school teacher; a college professor?

2. In what respects is the wide extension of the corporate organization of industry advantageous, in what respects disadvantageous, for (*a*) the business man? (*b*) the investor? (*c*) the community at large?

3. What part, if any, do commercial banks play in (*a*) the process of investment? (*b*) the increase of capital? (*c*) the course of industrial development? (*d*) leadership in the business world? In what respects may the influence of commercial banks be undesirable?

4. By what process, if at all, should you expect the following to influence the general price level in the United States: (*a*) advertising; (*b*) the growth of the trusts; (*c*) increasing demands of trade-unions; (*d*) extravagant purchases of automobiles; (*e*) increased output from South African gold mines; (*f*) wider use of deposit accounts in France?

5. Explain the parts played in the course of industrial crises and depressions by (*a*) distributing middlemen; (*b*) financial middlemen; (*c*) the accumulation of fresh savings; (*d*) extensive crop failures; (*e*) an increasing gold supply; (*f*) the failure of an important industrial incorporation; (*g*) an extension of government interference with the conduct of business.

6. In the case of urban sites, what are the arguments for and against state appropriation of (*a*) all economic rent? (*b*) all future increases of economic rent? (*c*) part of future increases of economic rent?

7. Should taxation be used as an instrument for (*a*) appropriating illegitimate incomes? (*b*) restricting undesirable business practices? (*c*) absorbing monopoly profits? (*d*) reducing inequalities of wealth? For what other objects may taxation be employed?

8. Give the arguments (*a*) from the viewpoint of the trade-unionist, (*b*) from the viewpoint of the economist, for and against

1. the closed shop;
2. the open shop;
3. the closed union;
4. the open union;
5. labor-saving appliances;
6. limitation of output;
7. piece-work;
8. a standard rate of wages;
9. semi-military discipline by employers;
10. the "scab";
11. the strike;
12. the lockout.

9. How is industrial leadership affected by (*a*) the diffusion of education? (*b*) freedom of opportunity? (*c*) inequality of possessions? (*d*) immaterial rewards?

10. Upon what grounds, if any, are the following to be condemned or justified: (*a*) the right of inheritance; (*b*) the institution of private property; (*c*) the leisure class?

The question set in the regular class meeting of Economics A for October 18, 1913, and repeated on the final examination in June, 1914, was as follows: "'The principle of protection

is to build up our home industries by manufacturing our own products. This gives our people employment, keeps the money in the country, and makes this country an independent and self-reliant nation.' Wherein are these arguments valid? Wherein invalid? Give your reasons."

The answers to the question were to be graded according to the following analysis of the elements a correct answer was expected to contain.

ANALYSIS FOR GRADING ANSWERS

Question parts:	Answer parts:	Weight given:
1. The principle of protection is to build up our home industries by manufacturing our own products.	1. The principle of protection not necessarily confined to manufacture. May apply to agriculture, for example.	.02½
2. This gives our people employment.	2. Protection does not increase employment, but simply changes the direction of industry.	.30
3. Keeps money in the country.	3*a*. This involves the fallacious notion that all importations are paid for in money. Of course only international balances are settled in specie.	.20
	b. High protection may cause a somewhat greater share of the world's monetary stock to remain in the country.	.02½
	c. The statement implies that money is peculiarly desirable or in a special sense "wealth." This, of course, is erroneous. A large stock of money is, in general, no gain; it simply means the use of a greater number of counters.	.12½

	d. There may be a slight gain, however, in the purchase of foreign commodities produced on a lower price level.	.02½
4. And makes this country an independent and self-reliant nation.	4*a*. Self-sufficiency is no more an economic goal among nations than among individuals. Division of labor is desirable, for it leads to the adaptation of industry to economic advantage. In other words, nations will produce those commodities in the production of which they have the greatest comparative advantage.	.25
	b. Military self-sufficiency may perhaps be justified on political grounds.	.05

One hundred and twenty-two answers to this question on the papers written in October were carefully corrected according to the above analysis by the staff of Economics A and the grades given are compared below with the grades

Grades in October	Grades in June										Totals	
	0	10	20	30	40	50	60	70	80	90	100	%
10		2	4	7	7	3	12	9	2	1	47	38.52
20			5	1	6	5	8				25	20.49
30	1		1	4	1	2	5	3	3	1	21	17.21
40	1		1	1		2	4	2	2		13	10.66
50		1	1			1	1	2			6	4.92
60							2	2			4	3.28
70							3	1	1	1	6	4.92
80												
90												
100												
Totals	2	3	12	13	14	13	35	19	8	3	122	
%	1.64	2.46	9.84	10.66	11.48	10.66	28.69	15.57	6.56	2.46		

received by the same men on this identical question in the final examination in June, 1914.

The table shows, as might be expected, a general shifting toward the higher ranks; but it shows also that the question thus tested would be fully available for such a list as was proposed. The question proved difficult for beginners, yet not too difficult, since 61 per cent of the October answers could be graded 10 or above. It also proved sufficiently difficult for the majority at the end of the year, for almost half (57) of the men received a final grade lower than 60. In continuation of this experiment it would be interesting to give the same question to students in higher courses in the Department, both during the fall and at the end of the year.

V. Examination Questions

According to the statements made by the instructors of the Department, which for convenience of reference are summarized below,[1] two clearly defined aims characterize

[1] Instructor

B . . To think clearly, and form a rational conclusion; development of the power to analyze . . . to orient oneself, and keep one's bearing in the midst of the varying winds of doctrine; to reason consecutively.

F . . 1. Training in assimilation of facts (to put men in possession of the principal facts).
2. Training in critical *analysis*.

G . . 1. Survey of the subject at large (information).
2. Train men in thinking and reasoning (*independent thinking*).
3. Better citizens.
4. Training in investigation (advanced course).

E . . Perspective and background through information (historical course), and in addition, questions which develop power of *relating information*.

D . . Analysis of materials, methods of presentation; acquaintances with courses.
To weigh carefully; reason cogently; more capacity for comprehension and analysis.
To teach students to analyze.

C . . "To cultivate by practice the analytical faculty and judgment."
To consider "analytically a fact so as to find out its elements or its

practically every course in the Economics Department: (1) the imparting of a certain amount or sort of information; (2) training in the ability to analyze, to relate facts, and to reason. By some it is implied that this is a general training, but for the most part it is specified that the training is in handling the particular body of facts presented in the course.

In addition, a third aim is assigned in some of the advanced courses, — namely, training and guidance in independent thinking and investigation. There are one or two other aims stated, as for example, that of preparation for citizenship.

The examination questions given in these courses offer one way of estimating in how far their aims are actually realized. If it is intended to train students in reasoning, for example, the examination questions should be tests of their ability to reason. They should demand not simply a memory of how others have reasoned about these situations, but actual independent reasoning and thinking. With this question in mind, the examination papers in the various courses were inspected to determine what proportion of the questions in the examination papers call for information, and what proportion demand specifically analysis and reasoning.

The questions have been divided roughly into two classes, — "memory" questions and "reasoning" questions.

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significance, and the relation of the discovered fact to other facts either obvious or derived."

"Memory plays almost no part in the work. Only analysis and judgment will accomplish anything."

To cultivate the power to analyze a business situation.

A . . General knowledge of principles and their applications, and the real meanings of the study.

As much knowledge as possible of principles and the application and to Train students in methods of investigation and *reasoning* . . . to get men to think for themselves.

Acquaintance with literature.

"To impart information, to teach men to think and to investigate."

"Memory" questions were considered to be those that involved merely a statement of fact or opinion evidently developed in lectures, required reading, or sections. "Reasoning" questions involved expressions of opinion on the part of the student, organization of data in the examination room, analysis of new situations, and relating information to economic theory.

Some of the questions classified under "reasoning" doubtless demand simply memory of reasoning done in class or by the instructor, and probably others demand merely the memory of a formula, the rest being the somewhat mechanical application of it; but it would not be possible to decide in these cases without a very intimate knowledge of the courses in question. On this account there is doubtless more "memory" work demanded on the examinations than the results reported below would indicate.

Ten examples of questions which were considered to call primarily for memory and ten which were considered to call for reasoning are listed below.[1]

[1] "MEMORY" QUESTIONS

1. "The standard of living affects wages not directly, but" — how?

What evidence of varying standards of living appears in the statistics of births and deaths for different countries? for different social classes?

2. Under what conditions does inconvertible paper money circulate as readily as specie? Under what conditions, not as readily?

Under what conditions is the value of inconvertible paper money as great as that of specie? Under what conditions is its value less than that of specie?

State two indications of its having less value than specie. Which of the two is the more significant? Which is the more easily ascertained?

3. State points of similarity, points of difference, between the Federal Reserve system and the English banking system as regards (*a*) centralization of reserves; (*b*) centralization of note issue; (*c*) measures available for preventing panics.

4. (*a*) How was the capital for the construction of railroads prior to 1870 obtained in the different European countries? Why?

(*b*) Why was the railroad policy of Prussia modified after 1870? With what results?

5. Compare the English and Belgian methods of relieving the recent agricultural depression.

Fifty-one examinations, both mid-year and final, set in the following courses during the years 1912–1913, 1913–

6. Give an account of the main developments in the London money-market from the outbreak of the War until the end of February, 1915.

7. Explain: "puts"; "borrowing and carrying"; stock-exchange clearing house. Discuss the relations of the Stock Exchange and the banks in New York.

8. Compare the views of Mill and Ross as to the limits of social control.

9. What, according to Ross, is the relation of resentment to social worker?

10. What is sabotage?

"REASONING" QUESTIONS

1. Construct a simple index number of prices for 1914, using 1908 as the base. (A) Would the index-number point to a rise or a fall in the value of money? (B) Would a Board of Arbitration be justified in recommending a change in wages? If so, on what basis? If not, why not?

2. Explain briefly the immediate and the ultimate effects (if any) which each of the following changes, taken separately, will tend to have on the price of cotton, cotton-seed oil, and cotton-mill machinery; (*a*) prohibition of organized speculation; (*b*) a change of fashion toward greater use of cotton fabrics; (*c*) doubling of the population of the country. (Assume for all three cases that there is no international trade, and that the quantity of money remains the same.)

3. In what direction and by what process, if at all, would the following tend to affect the value of money in the United States: (*a*) increased demand for gold ornaments; (*b*) increasing lavish expenditures by spendthrifts; (*c*) a continued drain of specie to the East; (*d*) a larger output of silver in the United States; (*e*) abolition of all legally required banking reserves?

4. Outline briefly your views as to the immediate influence of the Civil War on (*a*) land policy, (*b*) banking, (*c*) tariff, and (*d*) industrial progress North and South.

5. "Surpluses have spelled disaster to the United States." Do you agree? When and how?

6. Assuming the laws of the United States to remain unchanged, how would our monetary stock be affected if the market ratio of gold and silver should become 18 to 1; 15 to 1; 12 to 1?

7. In Austria, "after 1870, — the value of paper money with respect to silver steadily rose until, in 1878, it reached parity with silver . . . In 1879, the free or private coinage of silver was stopped." Consider whether, after this action, the (1) silver pieces, and (2) the paper notes were commodity, credit, or fiat money? Had Austria not closed the mints to the free coinage of silver, how would the following have been affected in that country: (*a*) the monetary stock; (*b*) the monetary standard; (*c*) the value of money?

8. Explain or illustrate exactly what you understand by self-interest.

9. Outline a program for raising the wages of all the lower grades of labor.

10. Would the following appear on the income sheet or on the balance sheet? Under what name in either case?

1914, and 1914–1915, were included in the study: A, 1, 1a, 2a, 2b, 3, 4a, 4b, 5, 6a, 7, 8, 9, 11, 12, 13, 14, 24, 31, 32, 33.

The results were as follows (in percentages):

Instructor	Course	"Memory" Questions	"Reasoning" Questions
G	a	12	88
	b	17	83
B	a	38	62
	b	7	93
	c	62	38
F	a	68	32
	b	67	33
	c	63	37
	d	67	33
E	a	80	20
	b	74	26
	c	55	45
D	a	25	75
	b	87	13
	c	100	0
C	a	0	100
A	a	53	47
	b	78	22
	c	60	40

The above table gives the proportions in the final examinations only. Certain mid-year papers were also examined as follows (in percentages):

	Memory Questions	Reasoning Questions	Total of Mid-Year and Final Memory	Total of Mid-Year and Final Reasoning
Instructor G	46	54	48	52
Instructor D	55	45	46	54
Instructor A	17	84	31	69

Conclusion: There are discrepancies here and there between the statement of the aims of the instructors and

(*a*) Cost of a patent bought.

(*b*) Rent for storage of new machinery ordered from different firms and delivered at different times, but to be installed together, as soon as all arrives, in a new shop.

(*c*) Author's royalty on a copyrighted story printed and distributed in an extended advertising campaign.

(*d*) Cost of heating during permanent interior decoration of a new store.

the evidence furnished in the examination questions. The latter, of course, do not provide an altogether sufficient criterion on which to judge, but it is to be noted that, in the main, there is agreement between the statement of aims of the instructors and the kind of questions set in the examination papers. This is notably so in the case of Instructor C.

CHAPTER V

THE QUESTIONNAIRES

I. Construction of the Questionnaires

During the fall of 1914 provisional questionnaires to graduates and to students were drawn up and submitted to the Department of Economics. A joint committee later put these questionnaires into final form, and they were sent to alumni in February 1915 and given out in classes early in March.

The questionnaires read as follows, the larger printed form allowing ample room for replies:

1. *Questionnaire to graduates*

Harvard University

Division of Education — Department of Economics

Dear Sir:

The Department of Economics has invited the Division of Education to investigate the undergraduate instruction in Economics with a view to its improvement. This set of questions is sent out by the Division of Education with the approval of the Department of Economics. The Department of Economics joins the Division of Education in requesting that you give the questions your careful attention and mail this sheet in the enclosed envelope by March —. Your answers will be received by the Division of Education and will be treated as confidential by that Division if you so desire.

Yours truly,
The Department of Economics,
The Division of Education.

1. Name. Class
2. Address.
3. Occupation.

4. On the following page, please list the courses in Economics you took at Harvard and make some statement concerning their subsequent value to you. Have the courses proved valuable (*a*) in your vocation, and if so, in what way? (*b*) in your social, civic, or economic activities outside your vocation, and if so, in what way? (*c*) in other, more general phases of your life, and if so, in what way? Please feel free to make your statement in your own terms; if you cannot specify as to courses, but can make a general statement concerning your work in Economics as a whole, please do so.

Courses	*Year*	*Statements*
.....	.....	.....
.....	.....	.....

5. Can you ascribe any of these values to a particular part or requirement of a course — as, for example, to a certain book assigned, lectures on a particular topic, a particular method of presentation or of study, or a particular thesis requirement?
6. In what way would a different treatment of any of these courses, either as to subject matter or as to method, have made it more valuable to you?
7. Is there any aspect or field of Economics which you now wish you had studied in college? Please indicate, in particular, such subjects as you desired to study in college but did not find offered in the programme of the Department.
8. What suggestions or criticisms, general or specific, have you to offer?

2. *Questionnaire to students*

HARVARD UNIVERSITY

Division of Education — Department of Economics

The information called for below is desired in order that the courses in the Department of Economics may as far as possible meet the needs of the students. You are requested to give the data called for as fully as you are able. Your answers will be received by the Division of Education, and will be treated as confidential by that Division. The answers will not be shown to instructors in Economics without the permission of the writers.

Please mail this sheet in the accompanying envelope not later than March oo.

1. Name.
2. Address.
3. Candidate for what degree?
4. Class? Underline: 1915, 1916, 1917, 1918.
   Graduate School of Arts and Sciences? Year.
   Graduate School of Business Administration? Year.
5. Indicate the courses you have completed in the Department of Economics:

Course	*Year*	*Grade*	*Course*	*Year*	*Grade*
.....	....	.....	.....	....	.....
.....	....	.....	.....	....	.....

6. What courses are you now taking in Economics? Do you intend to take others?
7. What is your field of concentration?
8. In what field, if any, are you a candidate for the A.B. with distinction?
9. What is to be your vocation after graduation?
   Do you expect your study of Economics to help you in that vocation? How?
10. What are your general reasons for studying Economics?
    What were your specific reasons for choosing particular courses?
    On what information and advice, if any, did you select your courses in Economics?
11. What courses in the University, outside the Department of Economics, have you found most helpful in your study of Economics? Why?
12. What difficulties have you met in your study of Economics?
    Please reply frankly and specifically, indicating any lack of facilities, disadvantageous arrangement of requirements in reading or thesis writing, lack of supervision in your work, or other obstacle to progress.
    If you have found any course disappointing, please name it and tell why, in your opinion, it did not meet your needs.
13. Mark in order (1, 2, etc.) the following phases of the work according to their relative helpfulness to you, beginning

with the most helpful: lectures; class discussions; assigned reading; reports; essay writing; laboratory exercises; comments or additional information.

14. Do you find your instruction in Economics related to the problems you meet in life? How?
Are you interested in any particular movement or problem of the day? What?

15. What added suggestions or criticisms, general or specific, have you to offer?

The replies were satisfactory in number and almost without exception careful and serious in character. Since the value of any answer, criticism, or suggestion made in response to a questionnaire depends very largely on the earnestness, standing, and character of the one who responds, it seemed best not to try on most of the points to secure data which could be handled statistically. Counting votes is not an especially profitable way in which to secure guidance in dealing with a technical problem. The drift of opinion, however, was in this case, as it is in others, worth knowing, and the summaries given below show the drift of opinion on a number of important matters. Yet if any suggestion or criticism is to be assessed at its proper value, the records of the men who make it must be known; and for this purpose (since it was obviously necessary to promise that the replies themselves should be received in confidence) the data from all the replies were entered on large sheets so that anyone interested might follow any reply across the various columns, get its general tenor, discover the courses taken and grades earned by the individual thus responding, and such other pertinent facts as his vocational purpose, or his reasons for taking courses in Economics.

The criticisms and suggestions from alumni concerning particular courses were recorded on a special set of cards and specific mention of individual instructors on a separate sheet. These special data and the large sheets mentioned

above are in the hands of the Department of Economics.[1] This chapter deals solely with questions of some general importance.

II. The Returns

A. Replies from Alumni

1. *The number of replies* received was 330, out of a possible thousand — a proportion reasonably gratifying in view of the somewhat formidable character of the questionnaire, and a total quite sufficient for safety in drawing conclusions. Twelve of the replies were not included in making the summaries which follow, either because the writers had taken no courses in Economics or because their answers were not pertinent. The summaries are based, therefore, on 318 replies.

2. *The classes* in which the men were grouped ranged from 1880 to 1913, as follows:

Class	Number of Men	Class	Number of Men
1880	1	1904	4
1890	3	1905	26
1891	42	1906	24
1893	1	1907	16
1894	12	1908	2
1896	11	1909	18
1897	1	1910	9
1899	9	1911	21
1900	1	1912	25
1901	12	1913	20
1903	60		
		Total	318

3. *The standing in the community* of some of the writers was suggested by the fact that their names were found in

[1] In order to secure data on specific courses now (1916–17) actually in operation, the Department of Economics has issued a second questionnaire to undergraduates, framed in light of our experience with the questionnaires here discussed. The returns from this second list of questions are available, and so far as they are of general interest may be secured from the Department.

"Who's Who in America" for 1914–15. Seventeen of the 318 writers were included in the records of this publication.

4. *The degrees* received by the writers are shown in the following list:

Baccalaureate Degrees

A.B.		308
A.B. without distinction	158	
A.B. cum laude	87	
A.B. magna cum laude	52	
A.B. summa cum laude	11	150
S.B.		10

Higher Degrees

A.M.	56
Ph.D.	21
L.H.D.	1
M.D.	15
LL.B.	71
M.E.	1
M.E.E.	2
S.T.B.	6
S.T.D.	1
M.F.	3
M.B.A.	2
Mus.B.	1

The group as a whole is therefore highly respectable, academically speaking.

5. *The occupations* of the writers are shown in the following table. There is a slight overlapping due to the fact that a few men gave more than one occupation.

Older Professions

The law	74
Teaching	46
Medicine	15
The ministry	7
	142

Technological Professions

Engineering	11
Naval engineering	1
Mining geology	1
Forestry	1
Chemistry	3
Architecture	5
	22

Business

Manufacturing	18
Management	9
Fiduciary positions	12
Banking and brokerage	22
Real estate and insurance	8
General commerce	13
Advertising	3
Publishing	4
Transportation	3
Bookkeeping	3
Buying, selling	6
Unclassified	1
	102

Agriculture, etc.

Farming	8
Horticulture	1
	9

Journalism

Newspaper or magazine work	8

Other Occupations

Art	2
Study	16
Secretarial work	6
Statistics	3
Public service	5
Scientic work	3
Not given	7
	42

6. *The courses* in Economics taken by the writers appear in the following list:

Economics I (now A) only	82	
Economics I and other courses	232	
Other courses only	4	
Middle-group courses		175
Upper-group courses		21
Unclassified		38

7. *The values* assigned to instruction in Economics are:

(*a*) *Vocational* values found by . . . . . 135 men
(*b*) *Social and civic* values found by . . . . . 84 "
(*c*) *General* values found by . . . . . 205 "

The returns on this point are considered in greater detail below.

8. *The parts of the work* which the men mentioned favorably or unfavorably were:

(*a*) *Lectures*, of which 31 men speak favorably
although 9 men speak unfavorably
(*b*) *Section meetings*, of which 20 men speak favorably
although 20 men speak unfavorably
(*c*) *Theses*, of which 33 men speak favorably
although 4 men speak unfavorably

9. *The methods* singled out for special mention by more than one man were:

(*a*) The method employed by Professor Taussig in Economics 2
This method is variously referred to as the Socratic, the quiz, and the class discussion method. It is specifically and favorably mentioned by 11 men.
(*b*) The method employed by Professor Carver in Economics 3.
This method is referred to as the discussion method and is favorably mentioned by 6 men, although 1 other did not find it inspiring.

Case and class discussion methods are mentioned favorably, but not in connection with any particular course, by 10 men. One man, however, considers the case method unsuited to undergraduates. Sixteen men speak favorably, in a general way, of quizzes or of other ways in which participation by students in class work may be secured. Many insist on small classes and personal contact with the

professor. Four lay stress on the great advantage of thesis work. Of two others who speak favorably of theses, one thinks they should be required often and short; whereas the other would require only few theses, on the ground that their preparation demands much time and attention. One man would require a thesis in Economics A. Three speak favorably of the written tests and papers.

10. *The assistants* are mentioned as follows:

Favorably by	7 men
Unfavorably by	31 "

Other replies which cover section meetings and the work of assistants together are summarized more completely below.

11. *The courses men wish they had taken* were:

1. Accounting	20 men
2. Banking	19 "
3. Sociology	12 "
4. Business Administration	12 "
5. Transportation	10 "
6. Labor Problems	8 "
7. Foreign Exchange	6 "
8. Commercial Law	5 "
9. Economics of Agriculture	3 "
10. Foreign Trade	3 "
11. Financial Crises	3 "
12. Tariff	2 "
13. Statistics	2 "

12. *Suggestions and criticisms* were offered by a large proportion of the writers, and may be summarized in part as follows:

a. *Lack of practical application* was mentioned so many times that it must be listed as a major criticism.

In all, this criticism is made or directly implied by	63 men
The opposite view was held by	1 man

Further analysis of the suggestions under this head is made in a later part of this Section.

Specific suggestions were:

1.	More frequent reference to current events suggested by	30 men
2.	Closer study of labor unions suggested by	6 "
3.	Fuller training in elementary bookkeeping as a preparation for the course in Accounting suggested by	5 "
4.	The study of modern sociological problems suggested by . . .	2 "
5.	Visits to Boston banks suggested by	2 "
6.	Lectures by successful business men on their specialties	2 "
7.	Admission of undergraduates to courses in the Business School suggested by	2 "
8.	The study of stock exchange methods suggested by	1 man
9.	Investigation of actual business methods suggested by	1 "
10.	The study of investments suggested by	1 "

b. *Miscellaneous suggestions* and comments may be listed as follows:

1.	Greater opportunity for contact with professors suggested by .	6 men
2.	More general courses in Economics at the expense of specialized courses suggested by	5 "
3.	The treatment of economic theories as less fixed than has heretofore been the custom suggested by	4 "
4.	Diminution of memory work in favor of development of thought suggested by	4 "
5.	Fuller guidance in the selection of courses suggested by	3 "
6.	Making some study of Economics compulsory suggested by . .	3 "
7.	Provision for direct practical training for definite work suggested by	2 "
8.	The teaching of methods rather than facts suggested by	2 "
9.	Vocational guidance in college suggested by	2 "
10.	Requirement of more written work suggested by	2 "
11.	More collateral reading suggested by	2 "
12.	More careful selection of reading and better correlation with the lectures suggested by	2 "
13.	Closer correlation of section meetings and lectures suggested by	1 man

Strong commendation of courses in Economics and the methods of instruction in vogue in the Department is not infrequent, and most of the answers imply satisfaction with the instruction in one way or another. Eight men speak in especially high terms of the courses given during their time.

13. On the values assigned to the instruction, to section-meetings and assistants, and to the practical applications of the instruction, more elaborate analyses were made.

The Value of Economics Courses to Lawyers and Judges

Of this group 18 took Economics 1 only, 12 took two courses, and 42 took three or more courses. Nineteen were graduated before 1900, 36 between 1899 and 1908, and 27 from 1908 to 1913, inclusive.

Value in Vocation

	Number	Per Cent
Number of replies considered	72	—
Decidedly advantageous in vocation	7	10
Favorable comment, moderate or uncertain statements	21	29
Vigorous adverse comment	2	3
Adverse, less vigorous comment	3	4
Totals: Advantageous	28	39
Of slight value if any	5	7
No comment	39	54

Social or Civic Value

	Number	Per Cent
Number of replies considered	72	—
Decidedly helpful in these respects	6	8
Favorable comment, moderate or uncertain statements	13	18
Vigorous adverse comment	3	4
Adverse, less vigorous comment	2	3
Totals: Courses helpful	19	26
Of slight value if any	5	7
No comment	48	67

General Cultural Values

	Number	Per Cent
Number of replies considered	72	—
Decidedly helpful in these respects	9	13
Favorable comment, moderate or uncertain statements	41	57
Adverse comment	1	1
Totals: Favorable comment	50	70
Adverse comment	1	1
No comment	21	29

Various Values Mentioned in Different Replies

A considerable number stated directly or implied by their answers that it was difficult to name specific values which had resulted from the courses taken. They felt that they had been helped in various ways but were unable to discover tangible results or give concrete examples. Fourteen (20 per cent) made definite statements to this effect.

Eighteen (25 per cent) thought that they had been helped in forming their opinions on current questions aside from political issues. Nine (13 per cent) were better able to decide political questions.

Mental discipline or general training of the mind is evidently considered an important result by many of this group. Eleven (16 per cent) make explicit mention of this point.

Eight (11 per cent) had formed habits of logical thought and careful investigation which were of assistance in their law practice. The method of Economics 2 was often alluded to as being especially valuable in this particular. Accounting was regarded by 7 (10 per cent) as being a subject which had proved of practical value in keeping their own accounts and in understanding the cases with which they dealt. Three (4 per cent) regarded the study of banking as having similar values. One spoke of the course in transportation as having been of practical assistance. Four (6 per cent) had a better understanding of business and corporate matters by reason of having taken Economics courses.

Nine (13 per cent) regarded the courses taken as being a valuable introduction to the field of economics, and 7 (10 per cent) were stimulated to do further private reading and study. Four (7 per cent) spoke of the courses as having "cultural" value. Three (4 per cent) mentioned

being better able to understand matters about which they read in newspapers or magazines. Three (4 per cent) had been stimulated to think more thoroughly on all subjects. Three others were able to converse more intelligently on economic subjects. Two felt that they were better able to grasp the work of the law school. One regarded the subject matter as "valueless" but had received some benefit in other ways.

Quotations from Lawyers on Values of Courses in Vocation

The degree granted from Harvard or other universities is noted in each case. If some special office is held, mention is made of the fact. Numbers refer to courses taken.

No. 16. A.B. (magna cum laude) LL.B. A.M. Class of 1891. Economics 1 and two others. Judge of Juvenile Court.

> I cannot say that any of these courses have been of direct value to me in my vocation or in my social, civic, or economic activities, but I consider all my work under Professor Taussig of great value to me in making up my mind as a voter on economic issues, and in my general understanding of the social order and the essence of wealth, the real function and nature of money, and the relation between capital and labor.

No. 56. A.B. A.M. Class of 1891. Economics 1 and 2. Department of Agriculture, Washington, D. C.

> The chief benefit I got, especially from the study of economic theories, was the mental discipline. I also received some indelible impressions which have ever since affected my point of view and method of approaching economic and public questions. . . . Except for the past two years, I have engaged continuously since 1894 in the general practice of law. It is only fair to say that one engaged in such an occupation is apt, at some time, to find use for every type of information; this is as true of one who devotes himself largely to giving advice to clients as of one who participates much in the trial of litigated

cases. . . . My contact with Mr. Brooks and my studies under him have, I feel sure, given me a much more sympathetic attitude toward social questions, such as general unrest, labor unions, and coöperation, than I would have had otherwise. . . . I can still hear Mr. Taussig talking and promoting controversy and discussion. I am sure that I was aided in my power of analysis, in the development of my capacity to weigh evidence and to balance off arguments, and in the growth not only of willingness to do, but of unwillingness not to do my own thinking. I prepared a thesis or special report for Mr. Brooks on the Farmers' Alliance Movement which was helpful to me in devising methods of getting data and in arriving at an understanding of a particular problem.

No. 228. A.B. (cum laude) Class of 1891. Economics 1, 6, and 2 (half year).

In trying land damage cases in court, I find that the subject of real estate values and rents is illuminated by what I learned in this course. (Economics 1). Business and affairs are the practical matters with which the activities of most of us are concerned; the courses in political economy lie closer to our later work than any other courses excepting possibly the English composition courses. The general discussions in class led by Professor Taussig were most interesting and helpful. They were more valuable than thesis writing. The latter is chiefly research work which has no permanent value different from the research work done in history or other courses.

No. 229. LL.B. Class of 1912. Economics 1, 3, 18, 4, and 2B. Social Ethics 1.

The real value from a course comes from the ability of the instructor to interest the student enough to do more than the required work and to continue study of it after college. Both Professors Carver and Gay sent me away feeling that I had been introduced to a subject worthy of further development; Professor Cole's course completed the training for one who does not become an expert accountant and has been of great value in several ways, especially in that the language of the business world is not Greek to a college man. The course in sociology was very instructive and of great value to a lawyer.

No. 67. A.B. LL.B. Class of 1906. Economics 1, 6, 8a, 8b, 18, and 21.

Of these courses, by far the most useful since graduation was Mr. Cole's course on Accounting. I cannot speak too highly of it. Professor Sprague's Economics 6, Financial History of the United States, and Economics 8*a* and 8*b*, Money and Banking, were interesting and instructive, but I have not found the information gained in them of any real value in the practice of law. Economics 21, on Business Law, I have always regarded as time wasted.

No. 106. A.B. (cum laude) LL.B. Class of 1907. Economics 1, 6, 8a, 8b, 12b, 23^1, 23^2, 12a. Treasurer.

Except for Economics 21, I do not value the courses on the basis of subject matter. In all of Mr. Carver's courses the greatest value was found in watching his mind work. Every development was so absolutely mathematically correct. . . . All courses in college were to my mind developers and the acquisition of miscellaneous information a mere chance which might as well occur in general reading as in a course. . . . I desire to raise a query as to the concrete benefits of courses on special subjects. For instance, the course on corporations is undoubtedly a wonderful course, but outside of the men who went to law school and learned it all over not one in fifty can state a single fact in the laws of corporations in restraint of trade. It did however grease a lot of heads which had done no previous thinking. The title caught the subjects but the course produced the results and the Sherman Act did not.

No. 270. A.B. (magna cum laude) LL.B. Class of 1909. Economics 1 and 2.

These two courses taken together constitute a general incursion into the subject and furnish a good working knowledge of economics which I believe to be a necessary part of a lawyer's equipment. These courses . . . have furnished a basis upon which I can rely in acquiring such special knowledge in a particular part of the subject as may from time to time be needed; for example, foreign exchange during the last summer, or anti-trust matters in relation to the Sherman and Clayton Acts. Economics 2, in its conference method of presentation, is a

most excellent mental training. I found it very helpful in preparing the way for a similar presentation of law in the law school.

No. 179. LL.B. Class of 1907. Economics 1, 4, 5, 9b, 6a, 6b, 8a, 8b, 11, 7a, 7b, 18, and 21. Deputy Attorney General (State).

The courses have been of undoubted value to me in my law practice, both in general practice and while representing the State. They gave me an understanding of the methods of business and general principles on which business should be carried on. They gave me a training in method of study, valuable in law school and in practice, especially in how to evolve general rules from concrete facts. In general practice, aside from technical practice rules (e. g. Evidence, Code Pleading), in giving advice, especially in corporation matters, I found that the knowledge acquired gave me a decided advantage over other men of my age who had not studied much economics. As part of a liberal education, they have been of value to me in my political activities, and socially, by enabling me to comprehend and discuss intelligently questions of government and other questions of general interest.

No. 177. A.B. (magna cum laude) A.M. LL.B. Class of 1901. Economics 1.

Of no perceptible value in my vocation. Certainly an addition to general knowledge in understanding the meaning of terms, names of theories, and exponents of theories. In civic activities (such as City Club of New York, Department of Public Charities, etc.), a lawyer naturally contributes the special professional knowledge he has which others may not bring, and in such specialty I cannot see that theoretical economics plays any valuable part. Of course an aid in pleasant intercourse with fellow-men, like any other bit of knowledge; nothing more, discernibly.

No. 71. A.B. (cum laude) LL.B. Class of 1909. Economics 1, 5, 9b, 2, 6b.

I think that the courses on the general subject are essential to a well rounded education. They are of real cultural value.

I have found none of the courses valuable in my profession except in the very broadest sense. There is a course in Accounting which I believe is listed in the Department of Economics which I regret not having taken. This is a course which I think numbers of my profession will agree is of great practical value to them.

The Value of Economics Courses to Manufacturers

Of this group 7 took Economics 1 only, 2 took only two courses in the Department, and 9 took three or more courses. Five were graduated before 1900, 2 between 1899 and 1908, and 2 from 1908 to 1913, inclusive.

Value in Vocation

	Number	Per Cent
Number of replies considered	18	—
Decidedly advantageous in vocation	3	17
Favorable comment, moderate or uncertain statements	7	39
Unfavorable comment	0	0
Totals: Advantageous	10	56
Of slight value if any	0	0
No comment	8	44

Social or Civic Value

	Number	Per Cent
Number of replies considered	18	—
Favorable comment, moderate or uncertain statements	3	17
No comment made	15	83

General Culture Values

	Number	Per Cent
Number of replies considered	18	—
Decidedly helpful in these respects	3	17
Favorable comment, moderate or uncertain statements	9	50
Totals: Favorable	12	67
No comment made	6	33

The answers from this group were very brief as a rule and it seems likely that the questionnaire did not receive as much

attention from the manufacturers as it did from the lawyers. For this reason it appears probable that the same weight should not be given to the tabulation of replies as would otherwise be expected.

Four (22 per cent) make no comment on the benefits derived from their courses in Economics. Four mention that they have found the information of value in business affairs. Four were helped in deciding political issues or questions of public economic policy. Three (17 per cent) found the courses a stimulation to thought on economic subjects and three others felt that the principles laid down had formed the basis of their later thought. Two (11 per cent) speak of the course as having been valuable mental discipline. Two more regard their courses as a general introduction to the field of economic reading and thought. One man speaks of being sufficiently interested to do further reading, and another was helped in the comprehension of the terms used in trade journals and in conversation with business men. One believes that the specific facts were of no value to him, although he derived other benefits from the courses.

It is significant that none of the manufacturers mention the course in Banking as having been of practical value, although three took the course. Of five who took Accounting, two mention it as having proved valuable. One speaks in high terms of the courses on railroads and two of commercial law.

Quotations from Manufacturers on the Value of Economic Courses

No. 148. A.B. (magna cum laude) Class of 1912. Economics 1, 2, 6a, 6b, 7, 18, and 9.

> The principles with which I became acquainted in the various courses in Economics which I took in college have formed so

fundamental a part of my general line of thought that they have undoubtedly greatly influenced me in business and been of value to me in every aspect of my life. . . . The work of Economics 18 and that of the courses in Business Law have been of concrete service in every business matter with which I have had to do.

No. 187. A.B. Class of 1903. Economics 1.

The course has not been of value in my vocation. It has increased my interest in and understanding of civic questions through belief in the need of sociological-economic reforms. It has not been valuable in more general ways.

No. 293. A.B. (cum laude) A.M. Class of 1903. Economics 1, 8a, and 8b.

I consider that the courses in economics have been of real substantial value; in particular in giving a better understanding of the broad questions related to them which come up both in business life and as questions of public economic policy. I do not consider the specific facts as of particular value, but feel that the understanding which they give of the deep underlying principles, however imperfect it may be, gives a real basis for better judgment and foresight on the private questions of one's own business policy as well as public matters.

The Value of Economics Courses to Physicians and Surgeons

Of this group 6 took Economics 1 only, 6 took two courses, and 3 took three or more courses. Eight were graduated before 1900, and the remaining 7 between 1899 and 1908.

Value in Vocation

	Number	Per Cent
Number of replies considered	15	—
Favorable comment, moderate or uncertain statements	1	7
Decidedly adverse comment	1	7
Adverse, less vigorous comment	1	7
Totals: Favorable comment	1	7
Of slight value if any	2	13
No comment made	12	80

Social or Civic Values

	Number	Per Cent
Number of replies considered	15	—
Decidedly helpful in these respects	2	13
Favorable comment, moderate or uncertain statements	5	33
Totals: Favorable comment	7	47
No comment made	8	53

General Culture Values

	Number	Per Cent
Number of replies considered	15	—
Decidedly helpful in these respects	3	20
Favorable comment, moderate or uncertain statements	8	53
Totals: Favorable comment	11	73
No comment made	4	27

Eight (53 per cent) speak of the courses as valuable in "broadening one's education," as a "contribution to general culture," or as giving "general training and knowledge." Five (33 per cent) were helped to a better understanding of social questions and 5 others were better able to form an opinion on political issues. Three (20 per cent) had a clearer insight into financial operations, which they considered of value. Two had found the courses in Banking helpful. One had been helped in his general reading, another in ordinary conversation, and a third considered the courses a part of a valuable foundation for his later studies.

Quotations from Physicians

No. 309. A.B. M.D. Class of 1896. Economics 1 and 7. Hospital Superintendent.

> These courses have been of value in helping me solve some of my medical problems, as quite a portion of my work has been in connection with the poor or working people. Especially is this true of Economics 1.

No. 72. A.B. (cum laude) M.D. Class of 1899. Economics 1 and 6.

Economics 6 gave me a knowledge without which I could not have properly understood many of the contemporary governmental problems. The thesis I wrote on the Merchant Marine has been of value in late years in coaching school debates and in friendly arguments since the war broke out. All in all, I consider it one of my most valuable courses.

The Value of Economics Courses to Editors, Journalists, and Newspaper Men

Of this group 3 took Economics 1 only, 2 took two or more courses, and 5 took three or more courses. Three were graduated before 1900, 3 between 1899 and 1908, and 4 between 1908 and 1913, inclusive.

Value in Vocation

	Number	Per Cent
Number of replies considered	10	—
Decidedly advantageous in vocation	2	20
Favorable comment, moderate or uncertain statements	4	40
Decidedly adverse comment	2	20
Adverse, less vigorous comment	2	20
Totals: Favorable comment	6	60
Slight value if any	4	40

Social or Civic Values

	Number	Per Cent
Number of replies considered	10	—
Decidedly helpful in these respects	1	10
Favorable comment, moderate or uncertain statements	3	30
Totals: Favorable	4	40
No comment made	6	60

General Culture Values

	Number	Per Cent
Number of replies considered	10	—
Decidedly helpful in these respects	1	10
Favorable comment, moderate or uncertain statements	5	50
Totals: Favorable comment	6	60
No comment made	4	40

Three regard their courses as having "cultural" value and 3 praise "mental training" and "methods of study." Two were given a broader outlook which they considered valuable to a writer and 2 felt that their interest had been awakened in certain economic problems. One had found the course in Accounting of practical assistance. One had been helped in finding material, and another regarded his courses as a good foundation for further study.

Quotations from Journalists, Editors, etc.

No. 276. A.B. (summa cum laude) Class of 1907. Economics 1, 14a, and 14b. Bureau of Education, Washington, D. C.

> I still consider Economics 1 probably the most valuable course I took in college. For my present work in surveying the general educational field it was indispensable. . . . The opportunity to get different points of view, as represented by different men — Taussig, Andrews, Ripley, etc. — was especially valuable.

No. 191. A.B. Class of 1903. Economics 1, 6, 9, 18, and 21. With . . . and Company, educational publishers.

> Courses 9, 18, and 21 have all been valuable in my vocation. Economics 9 gave me an unprejudiced view of the labor problem before I came in contact with the view of the employer. 18 was valuable because in executive work I have constant need to know the meaning of accounts, how to construct them so as to show the actual condition of business, and how to interpret them. The study of cases in Economics 21 was good mental drill and training for business life. The case method gave me a good idea of what the common law is and how an attorney goes to work to make up his case. All my courses in Economics were among Harvard's most valuable contributions to my "liberal education."

The Value of Economics Courses to Educators, Professors, Teachers, and Ministers

Of this group 18 took Economics 1 only, 10 took two courses, and 24 took three or more courses. Thirteen were

graduated before 1900, 26 between 1899 and 1908, and 13 from 1908 to 1913, inclusive. Nine were professors of Economics. Four (8 per cent) made no comment on the value of the courses to them.

Value in Vocation

	Number	Per Cent
Number of replies considered	52	—
Decidedly advantageous in vocation	8	15
Favorable comment, moderate or uncertain statements	10	19
Vigorous adverse comment	2	4
Adverse, less vigorous comment	3	6
Totals: Advantageous	18	35
Of slight value if any	5	10
No comment made	29	56

Social or Civic Values

	Number	Per Cent
Number of replies considered	52	—
Decidedly helpful in these respects	4	8
Favorable comment, moderate or uncertain statements	14	27
Decidedly adverse comment	1	2
Adverse, less decided comment	1	2
Totals: Favorable comment	18	35
Of slight value if any	2	4
No comment made	32	62

General Culture Values

	Number	Per Cent
Number of replies considered	52	—
Decidedly helpful in these respects	6	11
Favorable comment, moderate or uncertain statements	28	54
Vigorous adverse comment	1	2
Totals: Courses helpful	34	66
Of slight value if any	1	2
No comment made	17	33

The replies from this group are usually very brief and many of them are unsatisfactory because the statements tend to be very general, sometimes uncertain in meaning, and are rarely concrete or objective.

Fifteen (29 per cent) found their courses helpful in forming opinions on political issues. Eleven (21 per cent) were helped in solving social problems or in conducting sociological investigations. Several of these were ministers. Eleven (21 per cent) felt that new interest had been aroused in questions of which they were previously ignorant, or that their outlook had been broadened. Six (12 per cent) were better able to understand "current economic problems." Eight (15 per cent), who were not teachers of Economics, had gleaned information from the courses which had been useful in presenting their own work in schools or colleges. Among those who used such information, one was teaching English, one Agriculture, and another History. Five (10 per cent) spoke of having received training in reasoning or in critical thinking (mental discipline). Four (8 per cent) mentioned "cultural values." Four others were better able to understand business affairs or had received a "general training which was useful in the business affairs of life."

Three (6 per cent) regarded their study of the subject as having provided the basis for much of their present trend of thought or as having altered their outlook upon life. Three were led to do further reading or were stimulated in a desire for "more culture and information." Two regarded their courses as a general introduction to the field of economics. Two mention the course in Accounting and one the course in Banking as having been of material assistance in practical affairs.

Quotations

No. 151. A.B. (cum laude) A.M. LL.B. Class of 1906. Economics 1, 2, 3, 6, 12b, and 16. Lecturer on economic subjects.

> Economics 2 in particular was extremely stimulating to critical thinking. A certain amount of Economics is absolutely

essential . . . to show the superficial but cocksure ignorance of the average successful lawyer or business man in discussing public affairs.

No. 24. A.B. (cum laude) A.M. Class of 1901. Economics 1, 5, 6, 7, 9, 17, and 20. Education. Administration.

The course in Accounting has been of great practical value both during a year and a half in a railroad office and since in School Administration. Some scraps of information have been valuable in my teaching but my real profit from the courses was through personal association with men like Ashley, Dunbar, and Taussig. I consider my work in Economics cultural and not vocational. It was the historical courses that I valued most highly.

No. 81. A.B. (cum laude) A.M. Ph.D. Class of 1901. 16 courses in Economics. Assistant Professor of Economics.

The courses I took at Harvard have been of value from the point of view of content and training in the work. They awoke or strengthened my interest in the subject, and of course greatly influenced my whole outlook on life. It is not easy to distinguish in other ways between this preliminary training and the work I have done since.

No. 141. A.B. Class of 1894. Economics 1. Minister.

No course taken in college has proved more valuable. For twenty years I have been active in social, civic, and labor work. As a minister and social worker I have many times been thankful for the elementary training in economic reasoning afforded by Economics 1.

No. 250. A.B. (Cornell) A.M. 1905. Ph.D. Several courses in Economics. Associate Professor of Sociology.

Naturally the courses taken have been of direct value to me in my work as a teacher. Quite as naturally, perhaps, I find them of direct use in my activities as a citizen. They give added interest in following political and social movements.

The Value of Economics Courses to Business Men, Including Bankers, Brokers, Merchants, Clerks, Salesmen, Advertisement Writers, Buyers, and Insurance Agents

Of this group 10 took Economics 1 only, 10 took two courses, and 32 took three or more courses. Twenty-one were graduated before 1900, 20 between 1899 and 1908, and 11 from 1908 to 1913, inclusive.

Value in Vocation

	Number	Per Cent
Number of replies considered	52	—
Decidedly advantageous in vocation	6	12
Favorable comment, moderate or uncertain statements	22	42
Vigorous adverse comment	3	6
Adverse, less vigorous comment	2	4
Totals: Helpful in vocation	28	54
Of slight value if any	5	10
No comment made	19	37

Social or Civic Value

	Number	Per Cent
Number of replies considered	52	—
Helpful in these respects	12	23
No comment made	40	77

General Culture Values

	Number	Per Cent
Number of replies considered	52	—
Decidedly helpful in these respects	4	8
Favorable comment, moderate or uncertain statements	29	56
Totals: Favorable comment	33	64
No comment made	19	37

Fourteen (37 per cent) found Accounting a highly valuable subject. Several suggest that this course should be compulsory for those who expect to be business men or lawyers. Four think that the course might have proved very much more helpful if it had been conducted in a different way. (See Suggestions on Economics 18.) Five (10

per cent) speak of the work on banking as having proved of practical assistance. Four (8 per cent) were helped by courses on railroads or transportation. Six (12 per cent) mention "valuable mental training" or say that they were helped to think in a "practical way." Six (12 per cent) were better able to form correct views on current economic questions. Five (10 per cent) mention social problems and seven (14 per cent) speak of political issues in the same way. Four were able to gain a foothold in business with less difficulty because they understood technical terms and underlying principles. Five regarded their courses as having paved the way for more general reading and study along economic lines. Three were better able to find articles or look up data bearing on the problems which they had to solve. Four valued the courses for a broad outlook upon the business world. Three had gained a conception of the underdeveloped resources and possibilities of future growth of the United States which had helped them in business. Only two valued their courses as part of a liberal education. One had been helped in managing the economic affairs of his household.

Quotations

No. 186. A.B. Class of 1911. Economics 1, 5, 18. Bond Broker.

> The courses in Economics have proved more valuable to me than all the rest of my college course. The course in Railroads affects me directly in my business. Economics 18 is of the utmost value to me, and I refer to Mr. Cole's book often. These courses teach you to think in a more practical way than any other subject can and they give you a foothold in any business.

No. 249. A.B. Class of 1913. Economics 1, 6a, 6b, 18, and others. Fruit Grower.

> Out of six or seven courses in Economics, I got nothing from any particular requirement, but rather gained a broader out-

look on life through the greater field of vision gained from the whole course. . . . My business calls for planting trees on hitherto unbroken ground. Many people have said that I would get discouraged, that it could not be done profitably, etc. . . . I believe that every Harvard man who has taken any courses in Economics or Philosophy gets and always keeps with him an imagination, an outlook on life that always gives him hope and courage to be able to find a way to do anything.

No. 8. A.B. Class of 1911. Economics 1, 8a, 8b, 18, 21, and 23. Citrus Fruit Grower, California.

Economics 1 was possibly of some help in labor problems, possibly of help in understanding public questions. . . . I was able to make considerable use of Economics 18 in revising the cost accounting on the ranch and expect to get a lot more help in the future in the same line. . . . Courses 8a, 8b, 21, and 23 have been of little if any practical value except that I feel that the general mental training in seeing things from a broader economic viewpoint is often of considerable indirect value.

Value of Economics Courses to Farmers and Foresters

Of this group 1 graduated before 1900, 2 between 1899 and 1908, and 6 from 1908 to 1913, inclusive. Two took Economics 1 only, 1 took two courses, and 6 took three or more courses.

Value in Vocation

	Number	Per Cent
Number of replies considered	9	—
Decidedly advantageous in vocation	1	11
Favorable comment, moderate or uncertain statements	5	56
Totals: Favorable comment	6	67
No comment made	3	33

Social or Civic Values

	Number	Per Cent
Number of replies considered	9	—
No comment made	9	100

General Culture Values

	Number	Per Cent
Number of replies considered	9	—
Decidedly helpful in these respects	1	11
Favorable comment, moderate or uncertain statements	5	56
Totals: Favorable comment	6	67
No comment	3	33

Two found the courses valuable because they gave a new outlook upon life and enabled the student to see things from a different point of view. Two were helped in solving political problems and 2 had received valuable mental training. One regarded the courses as part of a general education, one had been helped by understanding the laws of trade, and one had made good use of the course on Accounting (Economics 18).

Value of Economics Courses in Various Vocations

	I	II	III	IV	V	VI	VII
	Lawyers and Judges	Manufacturers	Physicians and Surgeons	Editors, Journalists, Newspapermen	Educators, Professors, Teachers, Ministers	Business Men	Farmers, Foresters
Vocational	39	56	7	60	35	54	67
Social-Civic	26	17	47	40	35	23	22
General Culture	70	50	53	60	66	64	67
Forming Opinions on Political Issues	13	22	33	0	29	14	22
Social Problems, Current Economic Questions	25	17	17	20	21	12	0
Habits of Thought; Mental Discipline	16	11	0	30	10	12	0
Accounting	10	11	0	10	4	37	11
Banking	4	0	13	0	2	10	0
Further Reading and Study	10	6	7	10	6	10	0
Number in the Group	72	18	15	10	52	52	9

NOTES: Groups III, IV, and VII are too small to admit of any important conclusions from the results. The subjects tabulated are points explicitly mentioned in the replies as values resulting from the courses and do not include inferences which might readily be drawn in many cases from the nature of the replies. Figures represent percentages of total number of replies from the given vocation. The columns do not total 100 per cent because the headings overlap in several ways.

Section Meetings and Assistants

Fifty-three men comment on the section meetings or the assistants. Thirty-two of these criticize the assistants or the method of conducting the sections. Nineteen make favorable comments and 2 speak favorably of the section meeting but adversely of the assistants. Many of those who criticize the section meetings most severely express themselves as on the whole favorable to the idea. Their comments are usually aimed at the method of conducting the meetings or at the assistants rather than at the system itself. In many cases general statements are made concerning the ineffectiveness of the sections without specifying what the defects were.

Seven believe that the instructors were so engrossed in their graduate studies or other work that they did not take the time to do the necessary amount of reading on current economic questions. Seven make mention of the fact that the assistants were impractical or limited in point of view. Five replies insist that more experienced men be placed in charge of the sections and 4 point out that the assistants lacked teaching experience.

Eight think that more time should have been taken for discussion on the part of the students. Only one man says that the discussion drove home the points touched upon in the lectures and stimulated an interest in the weekly assignment of reading. Two say that the section meeting was conducted as a means of finding out whether the prescribed reading had been done, and 2 others believe that there was much wasted effort in memorizing the work in a certain order due to the mechanical questions asked. Two think that the papers were graded as "task jobs" by the assistants and were not given proper consideration. Two suggest that the discussions were not properly correlated with the lectures.

Two regard the section meeting as a waste of time because a large group had frequently to wait while attention was given to an individual whose difficulties were not common to the others.

Two say that their instructor was of unusual ability, one that the papers were fairly and carefully marked, and one that the debate was found helpful.

Quotations

No. 226. A.B. (summa cum laude) Class of 1905. A.M. Economics 1, 2, 5a, 5b, 6a, 6b, 8a, 8b, 9, etc. Efficiency Expert, Manufacturing.

> An extension of class discussion under the guidance of a master of his subject would drive the principles of the several courses more deeply into the students' minds. The section-meeting system does not answer this purpose. All honor to the Austin Teaching Fellows; they struggle manfully with their little sections and answer admirably the purpose of making some of the students inhale the weekly outside readings; but they do not get under the skin of the undergraduate. I remember more of the courses under Professor Taussig and Professor Carver in which these full grown men directed the class discussions than I remember of any two other courses which consisted entirely of lectures or of two lectures plus one section meeting under a fledgling. . . . Suppose one or more of the full professors were each to take one of the sections each week. Every section would thus get a thick slice of the professional cake several times a year. The professor, by devoting the entire hour to spirited discussion, would leave a lasting impression on the minds of the students.

No. 219. A.B. (magna cum laude) LL.B. Class of 1908. Economics 1, 2, and 6b. Lawyer.

> Of the courses I took the one that to my mind could and should be improved was Economics 1, with regard to the work in the sections. Whether this was the fault of the assistants who had charge of the sections, or whether it was inherent in a course in a subject which is new to most of the men taking it,

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> An extension of class discussion under the guidance of a master of his subject would drive the principles of the several courses more deeply into the students' minds. The section-meeting system does not answer this purpose. All honor to the Austin Teaching Fellows; they struggle manfully with their little sections and answer admirably the purpose of making some of the students inhale the weekly outside readings; but they do not get under the skin of the undergraduate. I remember more of the courses under Professor Taussig and Professor Carver in which these full grown men directed the class discussions than I remember of any two other courses which consisted entirely of lectures or of two lectures plus one section meeting under a fledgling. . . . Suppose one or more of the full professors were each to take one of the sections each week. Every section would thus get a thick slice of the professional cake several times a year. The professor, by devoting the entire hour to spirited discussion, would leave a lasting impression on the minds of the students.

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Section Meetings and Assistants

Fifty-three men comment on the section meetings or the assistants. Thirty-two of these criticize the assistants or the method of conducting the sections. Nineteen make favorable comments and 2 speak favorably of the section meeting but adversely of the assistants. Many of those who criticize the section meetings most severely express themselves as on the whole favorable to the idea. Their comments are usually aimed at the method of conducting the meetings or at the assistants rather than at the system itself. In many cases general statements are made concerning the ineffectiveness of the sections without specifying what the defects were.

Seven believe that the instructors were so engrossed in their graduate studies or other work that they did not take the time to do the necessary amount of reading on current economic questions. Seven make mention of the fact that the assistants were impractical or limited in point of view. Five replies insist that more experienced men be placed in charge of the sections and 4 point out that the assistants lacked teaching experience.

Eight think that more time should have been taken for discussion on the part of the students. Only one man says that the discussion drove home the points touched upon in the lectures and stimulated an interest in the weekly assignment of reading. Two say that the section meeting was conducted as a means of finding out whether the prescribed reading had been done, and 2 others believe that there was much wasted effort in memorizing the work in a certain order due to the mechanical questions asked. Two think that the papers were graded as "task jobs" by the assistants and were not given proper consideration. Two suggest that the discussions were not properly correlated with the lectures.

Two regard the section meeting as a waste of time because a large group had frequently to wait while attention was given to an individual whose difficulties were not common to the others.

Two say that their instructor was of unusual ability, one that the papers were fairly and carefully marked, and one that the debate was found helpful.

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I do not know, but at least until the first hour-exams, the scope and idea of the entire subject was rather hazy to most of the men I knew. Personally, I did not find that the section work supplemented the lectures and outside reading as it should have.

No. 200. S.B. (cum laude) Class of 1911. Economics 1, 5, 18, and 28. With . . . Railroad.

The assistant in this case was a graduate of a smaller college who was working for a Ph.D. He was totally out of sympathy with his students, and he was positively a detriment. This is the main fault with the assistants — they don't care, take no pride in their duties, and work merely because it is a mild way of paying for their tuition. . . . I condemn the system of using unsuitable assistants in the courses.

No. 165. A.B. (cum laude) Class of 1912. Economics 1, 4b, 6a, 6b, 11b, 12, and 16. Law Student.

One point which in my opinion cannot be overemphasized, is the need of having assistants in the larger courses who are interested in the subject and in their students, and who are able to guide the discussion in section meetings so that it becomes more than a mechanical test of the retentiveness of the student's memory and the amount of time he has put on his work. If the student is led to anticipate a lively discussion in section meeting, his preparatory work immediately takes on a different aspect. He looks for intellectual problems that he knows he will have to grapple with and casts about in his own mind for arguments which he can use in the class room. The deadening effect of an assistant who merely tries to find out if you've done the prescribed reading is enough to spoil one's interest in any course on Economics.

No. 6. A.B. (cum laude) Class of 1912. Economics 1, 4a, 4b, and 6a. Newspaper (Editorial Department).

The men who serve as assistants are for the most part impractical men. In writing a thesis on a present-day subject, a man needs some guidance from men who have a more practical turn of mind. Theoretical analyses are not always sufficient. I met young instructors who were so engrossed in their graduate

work or in the theoretical principles of Economics that they apparently found little time to read the newspapers or current magazines.

No. 229. LL.B. Class of 1912. Economics 1, 2b, 3, 4, and 18. Lawyer.

The manner in which the instructors (not the professors) graded theses as task jobs and with no attempt to recognize or preserve original research leads one to give them what they seem to want — i. e., a hackneyed piece of work of so many pages that is easy to read (a typewritten thesis being sure of a passing grade). In one case, I deliberately copied a thesis from a book of a former Harvard Professor in the same course and received an A on it. Needless to say that ended my interest in thesis courses.

No. 276. A.B. (summa cum laude) Class of 1907. Economics 1, 14a, and 14b. Editor.

The review section with its discussion of the lectures and readings of the week was stimulating, possibly because the section-man was considerably above the average of the assistants.

Practical Applications

The following paragraphs elaborate the data given above under the head of *Suggestions and Criticisms*, part (a).

Sixty-three men criticize in various ways the practical applications made in the Economics courses. Thirty-five of these state that in nearly all courses more emphasis ought to be placed upon practical problems of the present day. They seem to think that for the great majority of students the matter dealt with was too theoretical, philosophical, or historical, and had too little concrete application to problems with which the classes could be expected to be familiar. Discussions of a theoretical character appear to have left little or no impression unless they were applied to actual conditions through theses, discussions, or investigations on the part of the student. In this connection it may be

interesting to note that ten replies were received containing statements to the effect that the writers had forgotten all of the material learned in Economics and that so far as they could see they had derived no benefit from the study. Two of these admit that they did not study as they should have done and received passing grades by cramming for examinations. (These ten are not included in the 63 tabulated above.)

Seven suggest that visits be made to banks, stock exchanges, factories, and various business houses in order to give the students the needed contact with the business world. Several suggest that speakers from the outside be brought in to lecture on the fields in which they have proved successful. Three believe that there should be illustrations of the actual transactions of banking, stocks and bonds, etc., for the sake of students who have had a limited experience or a deficient secondary school preparation. Debates on contemporary issues are frequently spoken of as a good means of arousing interest and stimulating further study.

Among the topics which are mentioned as being neglected are: labor problems from the employer's point of view (6 replies); socialism (5); foreign exchange (1); scientific management and business organization (1); single tax (1). Four men want the department to do more toward teaching correct ideals of citizenship and 3 think that more should be done toward combating the propaganda of the radical press.

Two want the principles expounded by Mill more thoroughly applied to modern times and 1 thinks that the time spent in reading Spencer was entirely wasted. Two think that students get a false conception of the significance of present-day problems due to the predominance of theoretical and historical discussions.

Two think that it would be helpful to present a brief

summary or survey of the principal factors in our own economic system in order that the student may have some concrete foundation upon which to base his later theoretical study. Three suggest that students be earlier familiarized with the current literature on economic questions both in the technical and in the popular periodicals. Two are of the opinion that much valuable aid could be rendered graduates by the publication of annotated bibliographies of current economic literature. Lack of guidance from mature, practical men in selecting courses and in writing theses was felt to be a serious fault by two persons.

Quotations

No. 38. A.B. Class of 1906. Economics 1, 2, and two other courses. Mining Engineer.

> Wherever possible, an application of economic principles to present-day conditions will do more to emphasize the importance of the theory and to impress the same on the mind than any amount of "extra reading" or thesis work. A free discussion of economic theory from all angles is the best possible incentive to study. I got more out of conferences, I think, than out of all the rest of the work. The instructor allowed a certain amount of informality and toward the end debate was pretty strong. One excellent feature is to encourage independent ideas and bring them up for discussion.

No. 56. A.B. A.M. (Bis.) Class of 1891. Economics 1 and 2. Lawyer.

> I think the aim should be, without diminution of training in sound economic thinking, to develop real economists who are in touch with modern conditions, particularly in the United States. As one who took Economics as a mere side issue, and as a citizen who is profoundly interested in the problems of today, I feel the country's sore need of broad-minded, well-grounded, well-informed, up-to-date economists. I am sorry to say that I think there are few in the country. Those who profess to be economists are too nearly exclusively concerned in the far-away and the highly theoretical. Whether the col-

lege can do anything to remedy this, I don't know. I think it ought to try and try hard.

No. 125. A.B. (cum laude) A.M. Class of 1903. Economics 1. Teacher.

I should suggest . . . that the conference questions be applied to matters concrete enough to reach the life-interests of the student. On one of my pages I find the question, "Can a convertible paper currency become permanently redundant?" I cannot help having a good deal of curiosity as to what I did with that question on my paper.

No. 149. LL.B. Class of 1903. Economics 1 (repeated). Lawyer.

I took the course twice. . . . It was more or less unintelligible both times but at the second try I got through. I think the trouble was that I had no practical knowledge of banking or commerce and didn't know any of the methods or fundamental facts. It seems to me that a certain amount of practical instruction at the beginning . . . would be very useful. You can't expect a man to comprehend the first principles of Economics when he does not know the difference between a promissory note and a draft. I do not think that I am abnormally stupid, but I do not think that Economics 1, as taught, was of any value to me at all.

No. 166. A.B. (University of Kansas) A.M. Economics 1, 2, 4, 5, 6, 7, 8, and 20. Farmer and lecturer on Economics.

My general criticism is that most of the courses were not as practical as they should be; depended too much on theories or principles which when I have tried to apply them frequently did not fit. . . . College teaching is not close enough to business life and activity. . . . I have learned more helpful economics from my farming experiences and from talking with business men than I did at Harvard.

No. 193. A.B. (cum laude) Class of 1909. Economics 1, 2, 6a, and 6b. Editor, Lecturer.

Having come to college at a more mature age than most of my class-mates and after some years' experience in metropolitan

journalism, I was constantly irritated during my courses in history, economics, and government by the failure of teachers to relate class room material to current events. Students were not made to feel the vitality of the subjects under discussion. Present-day applications, references to new developments in a certain field, comments which showed that the teacher had read his morning newspaper were rare indeed and, in the case of some teachers, altogether absent. Student interest was invariably stirred by such references. . . . (Economics 2). The conclusion to which I have come is that economic theory has absolutely no bearing on the facts of life except over "long-time periods." And since 99 per cent of human concern is with "short-time periods," economic theory confounds rather than clarifies. I wasted a lot of time and thought trying to reconcile professorial conclusions with reality. I should strongly advocate a more honest admission that economic theory is largely a survival of the brightest in an intellectual prize fight over a definition of terms.

No. 227. A.B. (cum laude) Class of 1909. Economics 1, 2, 6a, 6b, and 18. Meat Packer.

In general (speaking only of courses for my time at college), I should suggest that the Department of Economics deem itself responsible for presenting to the young men, a large majority of whom are going to enter business, as faithful as possible a picture of modern business organization, its untold scientific possibilities, and the high ideals that can pervade it. They cannot in this work do without the assistance of the high-grade business man, who is the man who knows the problems, and who would be glad to address the students.

No. 228. A.B. (cum laude) Class of 1891. Economics 1, 2, and 6. Lawyer.

If a piece of legislation like the Rural Credits Bill had been given me for investigation and report, I should have been infinitely more benefitted than by digging into the economic aspects of the South Sea Bubble. When it is so easy for the practical to assist the theoretical, it should constantly do so. There is no reason for Economics to be a "dismal science" if it is coordinated with contemporary affairs. A student of forestry seeks the forests; not all studies have forests to observe, but the

whole world every moment offers conditions and events for the information and observation of the student of political economy.

No. 286. A.B. (magna cum laude) Class of 1907. Economics 1, 18, and two others. Accountant.

Like most other college students, I was more interested in applied economics than in economic theory. The principles developed in the lectures should be more thoroughly applied to actual practical cases in the sections or in thesis work. This should be done at every stage of the course; otherwise the principles learned seem of little practical importance and are soon forgotten.

No. 298. A.B. Class of 1906. Economics 1 and several other courses. Boston Merchant.

In vocational training the courses given at Harvard are painfully weak in my opinion, and largely so because they are so far removed from the public contact that real business training needs. They seem more to train the mind to meet situations that may arise in the business world than to offer actual contact with these situations. . . . If the college could induce 200 business houses to take one student for a month, and let him stay a week or more in each department, they would be adding a value to the Economic and Business courses that they do not now possess.

B. From Students

1. *The number of replies* to this questionnaire was 546 — a large proportion of the total number distributed, certainly much over half, although the exact percentage cannot be given because a considerable number of students received the blanks in several courses. There were 1007 registrations in Economics courses in March, 1915, which means, possibly, 850 individuals, not over 800 of whom could have received the questionnaires. The total is large enough to provide a good survey of opinion among students of

Economics in the College. The whole number was divided as follows:

Students taking Economics A only	308
Undergraduates taking courses more advanced than Economics A	208
Graduate students	30

2. *The degrees* for which these students were candidates were:

(*a*) Students taking Economics A only:

Candidates for A.B.	257
" " " S.B.	41
" " " A.A.	1
Not candidates for a degree	4
Not listed	5
	308

(*b*) Undergraduates taking advanced courses:

Candidates for A.B.	185
" " " S.B.	23
	208

(*c*) Graduate Students:

Candidates for A.M.	12
" " " Ph.D.	11
Not a candidate for a degree	1
Not listed	6
	30

Of the total number (546), about 80 per cent were undergraduates in regular standing.

3. *The classes* in which these students were registered were:

(*a*) Economics A:

Seniors (1915)	20
Juniors (1916)	82
Sophomores (1917)	173
Freshmen (1918)	6
Unclassified	26
Special	1
	308

(*b*) Advanced courses:

Seniors	80
Juniors	101
Sophomores	23
Unclassified	4
	208

(*c*) Graduate students:

First Year	20
Second	6
Third	2
Fourth	1
Not stated	1
	30

4. *Intention to pursue* Economics further is shown by the following figures:

	Undergraduates taking Economics A only	Undergraduates taking Advanced Courses	Graduate Students	Totals
Yes	132	86	7	225
No	107	68	6	181
Undecided	51	10	5	66
No answer	18	48	12	78

5. *Concentration* in Economics was indicated as follows:

	Students taking Economics A only	Students taking Advanced Courses	Totals
Economics	40	95	135
Economics and Government	14	17	31
Economics and History	6	8	14
Economics, Government, and History	5	11	16
Economics, Philosophy, and Social Ethics	—	1	1
Economics and Philosophy	—	1	1
Totals	65	133	198

6. *Candidates for degrees with distinction* in Economics appeared as follows:

	Students taking Economics A only	Students taking Advanced Courses	Totals
Economics	61	24	85
Economics and Government	1	2	3
Economics and History	0	1	1
Economics, Government, and History	3	5	8
Economics and Philosophy	1	3	4
	66	35	101

7. *The occupations* into which these students expected to go were:

	Students taking Economics A only	Students taking Advanced Courses	Graduate Students	Totals
1. Business . .	68	92	—	160
2. Law	57	43	1	101
3. Teaching . .	24	6	20	50
4. Engineering .	16	2	—	18
5. Medicine . .	16	2	1	19
6. Banking . . .	13	12	1	26
7. Chemistry . .	11	5	—	16
8. Journalism .	8	4	1	13
9. Ministry. . .	5	—	4	9
10. Agriculture .	3	5	1	9
11. Theatre . . .	3	—	—	3
12. Efficiency Engineering .	2	1	—	3
13. Mining . . .	2	1	—	3
14. Architecture .	2	—	—	2
15. Public Service	2	—	—	2
16. Consular Service . . .	2	2	1	5
17. Advertising .	1	—	—	1
18. Politics . . .	1	—	—	1
19. Geological Survey . .	1	—	—	1
20. Biological Research . .	1	—	—	1
21. Electricity . .	1	—	—	1
22. U. S. Army .	1	1	—	2
23. Accountancy .	—	1	—	1
24. Government Admin. . .	—	1	—	1

Ninety-six men were undecided: 11 Seniors, 31 Juniors, 50 Sophomores, 1 Freshman, 3 Unclassified. Sixty-eight of these men were taking Economics A only.

The occupations chosen were divided for certain purposes of comparison into two groups — first, the group for which Economics is commonly supposed to be preparatory — Business and the Law; second, the group for which Economics is not commonly supposed to be preparation — Engineering, Medicine, Agriculture, etc. The purpose of this division was to see whether students intending to enter

the Law or Business expect more direct help from Economics courses than do the others. Teaching, Journalism, the Ministry, Public Service, Consular Service and Politics, all occupations in which knowledge of Economics might be highly useful, were omitted from the count of the second group, in order that the contrast, if any appeared, might be sharply drawn between the clearly vocational outlook and the clearly non-vocational outlook of the students in the two groups. When an answer was equivocal it was put with one group or the other only when all the possibilities suggested fell within that group.

The groups compared thus as to numbers:

	Vocational Group	Non-Vocational Group	Neutral Group	Not Grouped
Students taking Economics A only .	150	57	42	59
Students taking Advanced courses .	155	18	12	23
Graduate Students	2	2	26	0
	307	77	80	82

According to this grouping, concentrations in Economics and in Economics and other Subjects divide as follows:

	Vocational Group			Non-Vocational Group		
	Students taking Economics A only	Students taking Advanced Courses	Totals	Students taking Economics A only	Students taking Advanced Courses	Totals
Economics	32	74	106	0	3	3
Economics and Government	9	16	25	0	0	0
Economics and History . .	4	7	11	0	1	1
Economics, Government and History	1	9	10	0	0	0
Economics and Philosophy .	0	1	1	0	0	0

Concentrations in Economics and in Economics and other subjects fall overwhelmingly in the vocational group. As will be seen from the table under the following heading, this group expects of the instruction help in vocations more frequently than does the other, but *direct* help only about as much.

8. *The help expected* by the students in their several vocations may be seen from the following figures:

	Students taking Economics A only	Students taking Advanced Courses	Graduate Students	Totals	Vocational Group	Non-Vocational Group	Not Grouped	Vocation not stated or too equivocal for Grouping	Totals
Directly helpful . .	48	45	16	109	67	7	35	—	109
Indirectly helpful .	158	118	9	285	216	50	19	—	285
Not helpful	39	12	0	51	19	16	16	—	51
No answer or too equivocal for record	63	33	5	101	5	4	10	82	101
Totals	308	208	30	546	307	77	80	82	546

Of the whole number of students 73 per cent expect help; 20 per cent direct help; 53 per cent indirect. Of the vocational group 92 per cent expect help; 22 per cent direct; 70 per cent indirect.

9. *The chief reasons* given for taking Economics courses were:

	Students taking Economics A only	Students taking Advanced Courses	Graduate Students	Totals
1. Expected courses to be directly helpful in vocation	25	37	8	70
2. Expected indirect help through a knowledge of principles, etc.	57	33	2	92
3. In order to understand elementary economic principles	30	10	0	40
4. As part of a general education, for information or broader vision	51	21	1	73
5. For mental training or methods of reasoning	13	18	3	34
6. For a better understanding of affairs of the day	17	21	2	40
7. For citizenship, better understanding of politics or legislation	11	7	1	19
8. For a better understanding of social problems	30	13	6	49
9. For a better understanding of financial, industrial, and legislative problems . .	29	19	2	50
10. For purely cultural values	10	2	2	14
11. Because of natural interest in Economics .	12	38	16	66
12. To fill out college schedules	32	9	0	41

10. The specific reasons for taking particular courses could not be distinguished from the general reasons for studying Economics. Apparently the students did not differentiate clearly between their general purposes in studying the subject and the ways in which special courses might serve those purposes.

11. *The advice* or information because of which courses were chosen appears from the following figures:

	Students taking Economics A only	Students taking Advanced Courses	Graduate Students	Totals
Faculty Advisor .	23	21	0	44
Member of the Faculty	8	19	16	43
Senior Advisor . .	1	1	0	2
Tutor	1	0	0	1
Relatives	8	14	0	22
Catalogue	9	33	4	46
Reputation of the Course	39	41	4	84

Total number of statements concerning sources of advice or information 242

12. *The most helpful courses* in other Departments (with respect to the study of Economics) were listed thus:

	Students taking Economics A only	Students taking Advanced Courses	Graduate Students	Totals
Government 31 .	2	3	—	5
English	5	—	—	5
Physics	3	2	—	5
Geology	2	3	—	5
History 30 . . .	1	5	—	6
" 32b . . .	5	—	1	6
" 32 . . .	—	7	—	7
Government 17 .	1	6	—	7
Chemistry . . .	5	2	—	7
Modern Languages	1	7	—	8
Psychology . . .	5	5	1	11
Government 9 . .	5	7	—	12
English A	11	3	—	14
History 10 . . .	7	9	—	16
History 13 . . .	8	14	—	22
Mathematics . .	16	14	—	30
Government . . .	19	10	2	31

	Students taking Economics A only	Students taking Advanced Courses	Graduate Students	Totals
Philosophy . . .	13	16	3	32
Social Ethics . .	4	23	8	35
History	19	22	3	44
" 1	27	23	2	52
Government 1 . .	48	26	—	74

13. *The reasons for this helpfulness* were listed thus:

	Students taking Economics A only	Students taking Advanced Courses	Graduate Students	Totals
1. Answers too general for classification . .	26	25	3	54
2. Courses said by student to give training in reasoning	20	8	1	29
3. Practical application of economic principles	10	14	—	24
4. Gave power of expression	14	8	—	22
5. Gave power of interpretation	4	2	—	6
6. Historical illustrations and applications of economic principles	36	39	2	77
7. "Supplementary values"	4	1	1	6
8. Subject matter — useful as introduction to and preparation for Economics	3	3	—	6
9. Subject matter parallel or identical . . .	12	15	3	30
10. Methods useful as introduction to and preparation for Economics				
(*a*) Practice in plotting graphs and diagrams	7	6	1	14
(*b*) Other useful methods not specified . .	12	1	1	14
11. Methods parallel or identical	0	2	—	2
12. Help obtained from reading	1	5	—	6
13. Gave a different point of view.	1	2	2	5
14. Gave valuable moral or ethical setting . .	—	3	1	4
15. Gave general information	1	—	—	1

14. *The difficulties* met in the study of Economics are shown by the following summary:

1. Nature of the course or of the instruction:
   - (*a*) Treatment too theoretical 79
   - (*b*) Lack of clearness in lecture and discussion 56
   - (*c*) Lectures not helpful 45
   - (*d*) Valueless discussion 24
   - (*e*) Course hurried, too much ground covered, more time for discussion needed 30
   - (*f*) Disregard of other authorities 13

2. Lack of facilities:

(*a*) Lack of books for assigned reading	52
(*b*) Need of a better textbook	40
(*c*) Crowded sections	11

3. Disadvantageous requirements:

(*a*) Too large or faulty assignment of reading	45
(*b*) Too much thesis work	13

4. Lack of supervision or efficient leadership:

(*a*) Need of closer touch with instructors	43
(*b*) Need of better section men	42

5. Miscellaneous:

(*a*) Personal incapacity, lack of interest	69
(*b*) Unsatisfactory or unfair methods of rating scholarship	35
(*c*) Misunderstanding of nature of course	13

15. *The relative helpfulness* of various phases of the work in Economics is summarized below. It was possible to treat the answers to this question statistically in a more elaborate fashion than could be used with the other returns.

Analysis and Interpretation of Returns to Question 13 of Questionnaire for Undergraduates

The question asked was as follows:

Mark in order (1, 2, etc.) the following phases of the work according to their relative helpfulness to you, beginning with the most helpful: lectures; class discussions; assigned reading; reports; laboratory; comments or additional information.

Practically all the students supplied data on this point. The distribution of the relative values (in point of helpfulness) assigned by the entire group is that indicated in Tables 1–3.

TABLE 1

NUMBER OF STUDENTS TAKING COURSES IN ECONOMICS ASSIGNING DIFFERENT POSITIONS TO VARIOUS PHASES OF THE WORK ACCORDING TO THE DEGREE OF "HELPFULNESS"

Phase of the Work	1	2	3	4	5	6	7	0	Totals
Lectures	97	148	214	42	15	4	3	4	527
Classroom Discussions	180	157	99	55	16	13	4	6	530
Assigned Reading	253	180	69	22	14	3	0	1	542
Reports	13	20	56	78	39	20	2	1	229
Essays and Theses	15	14	38	39	33	30	20	4	193
Laboratory Exercises	8	14	26	32	33	22	10	2	147
Comments, etc.	3	7	20	42	24	16	15	0	127
Totals	569	540	522	310	174	108	54	18	2295

TABLE 2

PER CENTS OF STUDENTS ASSIGNING DIFFERENT POSITIONS TO EACH PHASE OF THE WORK

Phase of the Work	1	2	3	4	5	6	7	0
Lectures	18	28	41	8	3	1	1	1
Classroom Discussions	34	39	19	10	3	3	1	1
Assigned Reading	47	33	13	4	3	1	0	0
Reports	6	9	24	34	17	9	1	1
Essays and Theses	8	7	20	20	17	16	10	2
Laboratory Exercises	5	10	18	22	22	15	7	1
Comments, etc.	2	6	16	33	19	13	12	0

TABLE 3

PER CENTS OF DIFFERENT POSITIONS ASSIGNED TO DIFFERENT PHASES OF THE WORK

Phase of the Work	1	2	3	4	5	6	7	0
Lectures	17	27	41	14	9	4	6	22
Classroom Discussions	32	29	19	18	9	12	7	33
Assigned Reading	45	33	13	7	8	3	0	6
Reports	2	4	11	25	22	19	4	6
Essays and Theses	3	3	7	13	19	28	37	22
Laboratory Exercises	15	3	5	10	19	20	19	11
Comments, etc.	0	1	4	1	14	15	28	0

From these figures a number of things are apparent: I. That in the opinion of the undergraduates various phases of the work in Economics rank in order: (1) Assigned reading;

(2) Classroom discussions; (3) Lectures, etc. II. Apparently the other phases of the work are relatively less helpful to the students as a whole. III. While these returns can represent only the opinions of the students, it is nevertheless true that the success of any of the phases of the work is conditioned by the attitude which the students assume toward it, and therefore the attitude of the students as indicated by these returns is important. IV. The returns are of course affected by the usual factor of individual differences and the fact that a fairly large proportion of the students can be found assigning first place to any of the three important phases indicates the supplementary nature of those three phases in class work.

Since it is possible that somewhat advanced students in Economics may well find a phase of the work particularly helpful which may be less helpful to the younger students who have not taken work in Economics previously, a comparison of the distributions in Economics A alone and in other courses in Economics may indicate some important differences. The distribution of assignments of value for Economics A alone is presented in Tables 4, 5, 6, and for students in all other classes in Economics in Tables 7, 8, and 9. Perhaps the only important difference is to be found in the fact that the order of helpfulness for students in Economics A alone is first, assigned reading, second, classroom discussions, and third, lectures; whereas for students taking advanced courses the order of the relative importance is first, assigned reading, second, lectures, and third, classroom discussion. In other words, for advanced students apparently the lectures are of much greater value than is the case with the students beginning the study of Economics. This is shown very definitely in the percentile distribution of tables.

TABLE 4

NUMBER OF STUDENTS TAKING ECONOMICS A ASSIGNING DIFFERENT POSITIONS TO VARIOUS PHASES OF THE WORK ACCORDING TO THE DEGREE OF "HELPFULNESS"

Phase of the Work	1	2	3	4	5	6	7	0	Totals
Lectures	24	63	172	30	6	2	2	4	303
Classroom Discussions	134	125	44	12	0	3	0	3	321
Assigned Reading	164	112	29	3	7	1	0	1	317
Reports	2	2	19	26	11	11	1	0	72
Essays and Theses	1	3	7	7	8	13	10	2	51
Laboratory Exercises	3	5	11	10	13	4	3	2	51
Comments, etc.	3	6	15	33	10	4	4	0	75
Totals	331	316	297	121	55	38	20	12	1190

TABLE 5

PER CENTS OF STUDENTS ASSIGNING DIFFERENT POSITIONS TO EACH PHASE OF THE WORK

Phase of the Work	1	2	3	4	5	6	7	0
Lectures	8	21	57	10	2	1	1	1
Classroom Discussions	41	39	14	3	0	1	0	1
Assigned Reading	52	35	9	1	2	0	0	0
Reports	3	3	26	36	15	15	1	0
Essays and Theses	2	6	19	14	18	26	20	4
Laboratory Exercises	6	10	22	20	26	8	6	4
Comments, etc.	4	8	20	44	13	5	5	0

TABLE 6

PER CENTS OF DIFFERENT POSITIONS ASSIGNED TO DIFFERENT PHASES OF THE WORK

Phase of the Work	1	2	3	4	5	6	7	0
Lectures	7	20	58	25	11	5	10	33
Classroom Discussions	40	40	15	10	0	8	0	25
Assigned Reading	50	35	10	3	13	3	0	8
Reports	1	1	6	22	20	29	5	0
Essays and Theses	0	1	2	6	15	34	50	17
Laboratory Exercises	1	2	4	8	24	11	15	17
Comments, etc.	1	2	5	28	18	10	20	0

TABLE 7

NUMBER OF STUDENTS TAKING ADVANCED COURSES IN ECONOMICS ASSIGNING DIFFERENT POSITIONS TO VARIOUS PHASES OF THE WORK ACCORDING TO THE DEGREE OF "HELPFULNESS"

Phase of the Work	1	2	3	4	5	6	7	0	Totals
Lectures	73	85	42	12	9	2	1	0	224
Classroom Discussions	46	32	55	43	16	10	4	3	209
Assigned Reading	89	68	40	19	7	2	0	0	225
Reports	11	18	37	52	28	9	1	1	157
Essays and Theses	14	11	31	32	25	17	10	2	142
Laboratory Exercises	5	9	15	22	20	18	7	0	96
Comments, etc.	0	1	5	9	14	12	11	0	52
Totals	238	224	225	189	119	70	34	6	1105

TABLE 8

PER CENTS OF STUDENTS ASSIGNING DIFFERENT POSITIONS TO EACH PHASE OF THE WORK

Phase of the Work	1	2	3	4	5	6	7	0
Lectures	33	38	19	5	4	1	0	0
Classroom Discussion	22	15	26	21	8	5	2	2
Assigned Reading	40	30	18	8	3	1	0	0
Reports	7	12	24	33	18	6	1	1
Essays and Theses	10	8	22	23	18	12	7	1
Laboratory Exercises	5	9	16	23	21	19	7	0
Comments, etc	0	2	10	17	27	23	21	0

TABLE 9

PER CENT OF DIFFERENT POSITIONS ASSIGNED TO DIFFERENT PHASES OF THE WORK

Phase of the Work	1	2	3	4	5	6	7	0
Lectures	31	38	19	6	8	3	3	0
Classroom Discussion	19	14	24	22	14	14	12	50
Assigned Reading	37	30	18	10	6	3	0	0
Reports	5	3	16	28	24	13	3	17
Essays and Theses	6	5	14	17	21	24	29	33
Laboratory Exercises	2	4	7	12	17	26	21	0
Comments, etc.	0	.5	2	5	12	17	32	0

A further question of interest is whether the better students assign a different order of values to the various phases of the work. Hence, in Tables 10, 11, and 12 is presented the distribution of assignments of value for advanced students in Economics whose previous work in Economics had averaged better than *C*. It is clear that the order of values for the better group of students is apparently lectures and assigned reading bidding for first place, with classroom discussion a bad third, essays and theses showing a possible gain over the distribution in the general group.

TABLE 10

NUMBER OF STUDENTS TAKING ADVANCED COURSES IN ECONOMICS ASSIGNING DIFFERENT POSITIONS TO VARIOUS PHASES OF THE WORK ACCORDING TO THE DEGREE OF "HELPFULNESS" — BETTER STUDENTS ONLY

Phase of the Work	1	2	3	4	5	6	7	0	Totals
Lectures	31	31	12	8	3	0	0	0	85
Classroom Discussion	14	8	25	17	9	6	2	2	83
Assigned Reading	32	31	15	8	3	0	0	0	89
Reports	6	9	12	17	11	2	0	0	57
Essays and Theses	9	5	16	13	8	5	1	0	57
Laboratory Exercises	1	4	7	7	9	9	5	0	42
Comments, etc.	0	0	1	3	4	6	2	0	16
Totals	93	88	88	73	47	28	10	2	429

TABLE 11

PER CENTS OF STUDENTS ASSIGNING DIFFERENT POSITIONS TO EACH PHASE OF THE WORK

Phase of the Work	1	2	3	4	5	6	7	0
Lectures	37	37	14	9	4	0	0	0
Classroom Discussion	17	10	30	21	11	7	3	3
Assigned Reading	36	35	17	9	3	0	0	0
Reports	11	16	21	30	19	3	0	0
Essays and Theses	16	9	28	23	14	9	2	0
Laboratory Exercises	2	10	17	17	21	21	12	0
Comments, etc.	0	0	6	19	25	27	13	0

TABLE 12

PER CENTS OF DIFFERENT POSITIONS ASSIGNED TO DIFFERENT PHASES OF THE WORK

Phase of the Work	1	2	3	4	5	6	7	0
Lectures	33	35	14	11	6	0	0	0
Classroom Discussion	15	9	28	23	19	21	20	100
Assigned Reading	34	35	17	11	6	0	0	0
Reports	7	10	14	23	23	7	0	0
Essays and Theses	10	6	18	18	17	18	10	0
Laboratory Exercises	1	5	8	10	19	32	50	0
Comments, etc.	0	0	1	4	9	21	20	0

Since the relative values of the various phases of the work of the course differ not only for individual students, but also for individual instructors, an analysis of the distribution of values assigned by students in Economics A is of particular interest. Here the important phases of the work are apparently lectures, class discussions, and reading. Since the lectures are the same for all, and the assigned readings are the same for all, interest centers particularly in the question of the relative value assigned to class discussion. Taking the group as a whole and considering only these three phases of the work we find that classroom discussion is assigned first, second, and third places in the proportion indicated in the table following. By using this as a rough standard for the entire group we may compare with that standard the relative value assigned to class discussion (the sole variable factor) as it appears in the returns by students separated according to the instructor concerned. These distributions are indicated in Table 13.

TABLE 13

DISTRIBUTION OF CLASS DISCUSSION ASSIGNMENTS OF VALUE (IN POINT OF HELPFULNESS) BY STUDENTS OF ECONOMICS A (1914–1915) ACCORDING TO THE INSTRUCTOR INVOLVED

Instructor	Number of Cases	Per Cent of Students Assigning Positions 1	2	3
All	322	42	39	18
Y	31	39	48	13
X	61	49	43	8
W	54	57	37	6
V	24	25	50	25
U	44	41	41	18
T	50	28	40	32
S	22	18	64	18

From this table it would appear that it is quite possible that instructors W and X are highly efficient in the conduct of classroom discussion, that instructors U and Y have a fair degree of success, and instructors S, T, and V are relatively unsuccessful in the classroom discussion. However, since relatively small numbers are involved, the table should be suggestive for self-examination rather than for dogmatic assertions concerning the relative efficiency of the classroom discussion as conducted by the various instructors.

16. *The problems met in life*, to which instruction in Economics was considered related, were stated in such general terms that the answers in this column have very little value, except to confirm the testimony on lack of practical applications. They are summarized below. Although the students are interested in very specific problems, in their statements concerning which they often show the influence of instruction they are receiving in courses in Economics, they interpreted the question concerning the relation between instruction in Economics and problems of life in an entirely general fashion.

1. General affirmative answers 89
2. Negative answers 122

3. Specific help in vocation 6
4. Indirect help in vocation 20
5. Understanding of fundamental economic principles 3
6. Better general education and information 5
7. Training in reasoning 9
8. Gave broader outlook 14
9. Gave political insight and information 32
10 Better understanding of social problems 39
11. Better understanding of economic problems other than social 56
12. Better understanding and power to judge current affairs 48
13. Better understanding of economic terms 1
14. Avoid current fallacies 4
15. Understanding banking and investment problems 16
16. Helpful in accounting 3
17. Helpful in accounting 2
18. Cultural values 1
19. Purchasing of commodities 3
20. Help in arranging Sunday School class work 1

17. *The movements or problems of the day* in which the students professed themselves interested were:

Labor problems, unemployment, trade unionism, capital and labor, etc. 61
Socialism 53
Tariff, protection, free trade . . . 32
Peace, disarmament. 24
Woman suffrage, feminism . . . 22
Problems of banking, finance, and currency. 18
Prohibition 17
Immigration, race problems . . . 17
Rural and agricultural problems 17
South American trade 16
The war, and its social and economic effects 15
Problems of business organization, development, and regulation . . 14
Educational problems 14
Single tax 14
Problems of government and politics 14
Municipal administration, city planning. 13
Taxation 13
Social reform in general 12
Public ownership and regulation 12
Preparedness 11
Public health, sanitation, housing 10
International trade, law, and relations 8
Trust legislation 7
Railroad problems 7
Religious problems 6
Conservation. 6
Distribution of wealth. 5
Industrial development and efficiency 5
Eugenics, sex problems 5
Coöperative enterprises 5
Land values and land titles . . . 5
Penology and prisons 5
The negro problem 4
Child labor 2
Pure food 2
Charities snd philanthropy. . . . 2
Juvenile courts 2
None 7
Many, all, in general 29

18. *Suggestions and criticisms* may be summarized as follows:

Sections and Assistants	Students taking Economics A only	Students taking Advanced Courses	Graduate Students	Totals
1. Poor personality and poor teaching ability	3	1	1	5
2. Hold aloof. Do not appreciate students' point of view	3	17	1	21
3. Hair-splitting distinctions and technical phraseology	1	1	1	3
4. Impossible to get clear outlines or well-defined ideas	1	3	—	4
5. Fewer sections and more lectures	5	4	—	9
6. Fewer lectures and more sections	11	3	—	14
7. Sections too large	6	2	—	8
8. Double A section undesirable	3	—	—	3
9. No instruction on "how to study"	2	—	1	3
10. Too much emphasis on the text	4	2	—	6
11. Time not properly allotted	2	4	—	6
12. Discussion ill directed. No limit on talkative members	3	4	—	7
13. Written questions not discussed in class	2	4	—	6
14. Reasons for failure not explained	1	—	—	1
Lectures				
15. Too theoretical	13	24	3	40
16. Better lectures desirable	5	1	1	7
17. Lectures follow book too closely	24	2	—	26
18. Object to textbook	3	—	—	3
19. Wish views of other economists	6	4	2	12
20. Suggest speakers outside department	4	1	—	5
21. Lectures not correlated with reading (See also 42 below)	1	1	—	2
22. Lectures and discussions do not clarify reading	3	1	—	4
23. Too much superfluous matter	4	2	—	6
24. More time on first chapters of book	3	—	—	3
25. More careful choice of topics	2	2	2	6
26. Too many qualifying expressions	2	1	—	3
27. Treat protection and free trade together	2	—	—	2
28. Hard to hear the lecture	6	—	—	6
Examinations and Tests				
29. More just and uniform marking system	6	4	3	13
30. General review to precede examination	4	1	—	5

	Students taking Economics A only	Students taking Advanced Courses	Graduate Students	Totals
Examinations and Tests				
31. Too much emphasis on technical terms	3	1	—	4
32. Questions on historical rather than economic view	2	—	—	2
33. Too little time on tests	5	2	1	8
34. Too much weight on mid-years and finals	1	2	1	4
35. More numerous papers, tests, and reports	5	6	—	11
36. Tests too easy	1	—	—	1
37. Questions asked for too much detail, lay too much stress on memory and offer no choice	3	—	—	3
Theses				
(See also 54, 55, 56 below)				
38. Requirements burdensome	1	18	2	21
39. More theses should be required	3	1	1	5
Reading				
40. Assign more outside reading	5	2	—	7
41. Reading requirements burdensome	2	10	1	13
42. Reading poorly correlated with lectures	7	8	—	15
43. Allow more general and require less specific reading	3	2	—	5
44. Criticism of individuals	1	4	—	5
General Suggestions				
45. More printed questions	5	—	1	6
46. Catalogue gives wrong impression	3	12	—	15
47. Abolish oral examinations	2	—	2	4
48. More contact, advice and help from professors	5	—	—	5
49. More discussions and debates	14	12	1	27
50. Open Economics A to freshmen	2	1	—	3
51. Discuss current periodicals in class	—	3	—	3
52. No material for thesis assigned	—	2	—	2
53. Theses should be more carefully supervised	—	5	1	6
54. Thesis subject too remote from the general topic	—	2	—	2
55. Economics Department suggest groups of studies in Economics for certain professions	—	—		1
56. Standardized principles expounded in sections	—	3	1	4

Favorable comments are frequent, as the following excerpts show. Favorable comments on individual instructors are often enthusiastic.

Students taking Economics A only.

Economics A. Twenty-six men speak favorably of this course and those who give it. The following are some of the comments: "Well run"; "admirably conducted"; "very good indeed"; "mechanically perfect"; "course is intelligently and efficiently handled"; "best run of all the large courses"; "the most efficiently conducted of any of the courses I have taken"; "technically above reproach." One man is so pleased with the course that he declares "it should be made compulsory."

Students taking Advanced Courses and *Graduate Students.*

Twenty men speak very favorably of the courses they have taken.

Economics A. "Well conducted"; "the most nearly perfect course in college — the theories can be grasped and bluffing doesn't count"; "I have nothing but praise for Economics A; the class discussions are particularly stimulating"; "sensibly conducted"; "of great value"; "the honor section is fine."

Other courses. "Economics 3 is well conducted"; "Economics 9 is extremely stimulating"; "Economics 5 and Economics 6 are well conducted"; "Economics 11 is one of the best courses I ever took"; "Economics 11 is the best course on account of the training in reasoning."

Comment on the Department in General. "Well satisfied with the Economics Department"; "courses are conducted in a very efficient, sensible way"; "the Economics Department seems the best conducted of any department."

These suggestions and criticisms are often put with a force to which the summary given above cannot quite do justice. The following summary taken directly from the replies is therefore added.

Section Meetings and Assistants

More criticisms are made by students on this subject than on any other single point. Much stronger feeling is evidenced by advanced and graduate students than by those taking Economics A only. Twenty-nine men from the first group and ten from the second (39 in all) make specific and severe accusations against the personality and teaching ability of assistants. They state that these instructors appear to have been chosen for high marks in Economics courses and not for their fitness as teachers, that they hold themselves too much aloof from the students and do not try to appreciate the student point of view, that they are unfair in their judgments and fail to be helpful in presenting the work or in stimulating discussion, and that they tend toward hairsplitting distinctions and technical phraseology. Graduate students are particularly opposed to the type of assistant often chosen.

Fourteen replies mention various ways in which the section meetings are not systematically conducted. They refer to the lack of specific planning of the work and say that it is impossible to get clear outlines or well defined ideas from the instruction given.

Ten advanced and graduate students think that discussions are frequently too "fine spun," are not properly directed, do not hold the attention of the class, are vague, technical, and do not clarify the questions raised.

The suggestion is made by four men that some means should be taken to standardize the principles expounded in the sections. They cite instances where the instructors have differed with professors on important issues and have thus confused the classes by injecting their own opinions.

Five men believe that there should be fewer sections and more lectures, but there are on the other hand thirteen replies

which consider the lectures of Economics A a waste of time and demand more section meetings.

Eight men object to the size of the sections and think that better discussions could be had in smaller groups.

Two men mention the AA section as especially undesirable and think that it should be abolished.

The following criticisms of methods in section meetings seem to be worth considering.

1. There are no lectures on how to study and little instruction in methods of collecting material, using library facilities, etc.

2. The sections emphasize the text to the exclusion of other important matters.

3. Too much authority is given to assistants in assigning reading, resulting in irregular assignments.

4. Where laboratory sections are required, the amount of outside reading is not decreased and the requirements are burdensome.

5. There is not always time to finish the problems assigned during the laboratory period.

6. The laboratory assistants are careless in checking up the work of the students.

7. Proper time allotment in the sections is often seriously neglected.

8. Discussions are not well directed, do not include enough students, and no limit is placed on talkative members.

9. The subject is not developed in new forms and interest is not aroused.

10. Too many puzzling questions are asked and textbook answers are expected.

11. Written questions are not discussed in class.

12. No definite explanations are given of the reasons for failure so that the student can avoid future blunders of a similar sort.

13. There is no uniform standard of requirements. The suggestion is made that the professors take sections in turn, thus giving the students a share of their time.

Lectures

The practical application of the courses is a matter which probably touches all the teaching in the Department, but seems especially important in connection with lectures, since the attitude taken by the professors in their lectures largely determines the trend of discussions and the character of written work. Thirty students in Economics A and thirty-three advanced and graduate students (sixty-three in all) believe that the courses are too theoretical, lack in concrete illustrations, and are not sufficiently applied to current, social, political, and financial problems.

Twenty-six men in Economics A object to having the lectures follow the textbook so closely. A considerable number of these object to the book itself. Sixteen men would like to have the views of other economists presented in Economics A. Many wish that speakers from other departments or from the business world might be heard.

The following seem to be the most important suggestions concerning the conduct of lectures.

1. Correlation between reading and lectures is not always apparent. Lectures and discussions do not clarify or properly criticize the required reading. 13 replies.

2. There is too much superfluous matter in Economics A and the course is confusing because of the large amount of material and the detail accompanying it. 6 replies.

3. More time ought to be spent on the first chapters of the book. The work of the first few weeks is theoretical and leaves a confused impression. 3 replies.

4. More careful choice should be made of the parts to be

treated in the lectures. Only the more difficult portions need to be discussed. 2 replies.

5. There are too many qualifying and limiting expressions. Students are confused by them. 3 replies.

6. No outline or summary is provided. Statistical matter is not put on the blackboards or distributed on mimeographed sheets. 6 replies.

7. Protection should be taken up simultaneously with free trade so that the two may be contrasted and compared. Let students choose for themselves on such questions.

8. The lecture cannot always be heard distinctly. 3 replies.

9. Lectures cannot be heard in the rear of the gallery. 3 replies.

Examinations and Written Tests

1. A more uniform and just system of marking is needed. 10 replies.

2. A general review preceding examinations would be helpful.

3. The method of grading graduate students leads to cramming and decreased real productive work and clear thinking.

4. Assistants expect students to use a certain phraseology in their answers which induces mimicry and discounts independent expression. Too much emphasis is placed upon technical terms used nowhere save in Economics courses. 4 replies.

5. Questions are asked from the historical rather than the economic viewpoint. 2 replies.

6. Too little time is given for the short tests. They are an unfair basis for judging ability. Foreigners especially find great difficulty in getting anything written on questions proposed. 6 replies.

7. Too much stress is laid upon mid-year and final examinations. 4 replies.

8. There ought to be more numerous papers, tests, and weekly reports. 8 replies from Economics A.

9. Questions ask for minute detail, lay too much stress on memory, and there is no choice of questions. 5 replies, Economics A.

Theses

1. Thesis work is overdone and the requirements are burdensome. 19 replies.

2. Thesis was assigned on which no material was available. 3 replies.

3. More help and advice ought to be given on the first thesis. All theses should be more carefully supervised. Professors are disappointing in the interest shown in graduate students. 4 replies.

4. Theses and reading requirements overlap.

5. The assigned subject was too remote from the general topic.

6. Theses in the different courses ought to be coördinated.

Reading

1. Assignments are irregular so that students cannot plan their work well.

2. More outside reading should be assigned in Economics A. 7 replies.

3. The requirements are burdensome in some courses.

4. Reading is not well correlated with lectures and discussions. 12 replies.

5. Allow more general and require less specific reading.

General Suggestions

1. The printed questions are very helpful. There ought to be more of them. 3 replies.

2. The catalogue gives the wrong impression in regard to Economics courses. Students are led to believe that they are practical courses.

3. Ventilation is poor in some rooms. Massachusetts Hall is a very unpleasant place in which to work.

4. Current periodicals should be read and discussed in class.

5. Oral examinations ought to be abolished. 2 replies.

6. More advice and help from the professors is needed. More personal contact ought to be secured through conferences. 16 replies.

7. There ought to be more emphasis upon discussions and debates. 29 replies.

8. Open Economics A to Freshmen and give a course especially suited to them so that men can decide earlier where they wish to concentrate.

III. General Discussion

The outstanding fact about both these sets of replies is their variety. The accomplishment of the alumni, taken as a body, and the seriousness and directness both of the alumni and of the students, as also the definiteness of their views, would give one respect for a concensus of their opinions; but it is hard to find any real concensus of opinion in their answers. One must be content to note tendencies, and to take individual suggestions for what they may be worth. This is probably the common experience with replies from questionnaires.

About half (58 per cent) of the graduates are in Business or the Law; about half (54 per cent) of the students intend to go into Business or the Law. Of the graduate group in Law and Business 35 per cent found their instruction in Economics actually helpful; of the undergraduate group

intending to enter these occupations 22 per cent *expect* to find their instruction in Economics directly helpful. Educators, journalists, ministers, and farmers find the courses vocationally valuable quite as often as do business men and lawyers; and the graduates as a whole find their work in Economics quite as valuable for "general culture" as they do in their vocations. The proportion who note *specific* social and cultural values is surprisingly small. On the whole, the expectations of the students are not unwarranted by the experience of their elders. The count on values shows, however, how difficult it is to differentiate one value from another — or how unused men are to the attempt. Perhaps it shows also the lack of definite objectives in the instruction and of full information on the part of students concerning their teachers' aims. It is a striking fact that the replies concerning specific reasons for choosing particular courses could not be distinguished from those concerning the choice of Economics as a field of college work. This fact is not unrelated, moreover, to the fact that these students found it impossible to make clear the connection between their courses and *specific* problems met in life.

The evidence as to the values of instruction in Economics thus shows no very exact conception of the bearing of the subject on the activities of men. Twenty per cent of the alumni make definite confession of their inability to discover tangible results from their study of Economics or to give concrete examples of its value. The preponderance of testimony to the effect that Economics had proved of value in "other, more general phases of life," rather than in vocations or in "social, civic, or economic activities outside vocation" — (vocational values found by 42 per cent of alumni, social-civic values by 26 per cent, general values by 64 per cent) — implies the same vagueness. This emphasis on "general" values runs through all the vocational

groups: of the lawyers, for example, 54 per cent make no comment on vocational values, and 67 per cent make no comment on social-civic values; whereas 70 per cent find general values. Fourteen per cent of the lawyers confess confusion of mind as to values. A similar showing appears from the testimony of the manufacturers: 44 per cent make no comment on vocational values, 83 per cent make no comment on social-civic values; whereas 67 per cent find general values. The tendency to credit the study of Economics with a "disciplinary" effect on the mind may well be another evidence of inability to discover specific applications. Sixteen per cent of the lawyers mention general discipline and many of the alumni, of all groups, use phrases implying belief in it. Although one who sees quite clearly the connection of instruction in Economics with definite objectives in the careers and interests of men may nevertheless see also a general effect of such instruction in widening mental perspective and fixing habits and ideals of intellectual thoroughness, still the unqualified ascription of "discipline" to instruction in any subject is not unlikely to mean that the student is unable or unwilling to discover just what use he has made of the facts, the principles, the ideals, the points of view, or the methods he acquired from his study. At any rate, there can be no reasonable question of the fact that the alumni are uncertain as to the direct applications of what they secured from their courses in Economics, whether they account it knowledge, insight, power, or whatever else.

Surely these facts afford a safe basis for effort to define more clearly the aims of college instruction in Economics. A sharper differentiation of objective between course and course can but render each course the more effective for its special purpose. This is as true of general courses as of others — and it is to be noted that there is some demand

for general courses even at the expense of the more specialized courses. If both teacher and pupil understand that a given course aims solely at general intelligence concerning economic facts and forces and that the course involves neither practical training nor the full discussion of special economic problems, there can be no disappointment or confusion if the course does not result in the development of special abilities or settled opinions on particular issues. But ought there not to be certain courses which do secure these results? Or, as it is more important still to ask, if courses are already given which seem clearly to favor practical and definite results, ought not these courses to be more openly set apart from the "cultural" and "distributive" courses and combined into concentration schedules for specific purposes? The alumni testimony concerning courses the writers "wish they had taken" is eloquent on this point. They wish they had taken courses of a practical character and evidently regret that they were not advised to do so. Since their time, to be sure, the Department has made much progress in this matter. There is a group of courses announced under the caption "Applied Economics," and the departmental schedules for concentration and the degree with distinction now distinguishes specialization in Applied Economics from specialization in Economic Theory or Economic History. But there is not enough emphasis on the aims to be achieved in such courses or such schedules. The academic distinctions between graduate and undergraduate courses confuse the issue, and the descriptions of the courses do not sufficiently inform the student of the results he may expect. The present (1917) offering of the Department is rich in special courses, but almost entirely lacking in any open statement as to their usefulness, either singly or in combination, for any possible purposes of the student.

All this is but to say that the replies to the questionnaires support the contentions of Chapter II, above, on Aims. In much of our college instruction we are ignoring the purposes and needs of the students in order to carry out theories which have never been openly discussed. We are insisting on academic distinctions involving issues never brought to the surface. The theory of formal discipline interplays in our work with the theory of general culture and the theory of special training, but we have no clearly defined scheme for achieving different values by definite means and in definite combinations of courses.

The replies to the questionnaires give very strong support to the conclusion that the instruction in Economics fails to bring the student into close enough contact with economic data outside of books. Probably this criticism applies more to the past than to the present, and it may be voiced less often by the "brilliant" student (who most readily fills words with content) than by his less theoretically-minded fellows. But among students as among alumni, the most frequent criticism is that courses are "too theoretical" or "lack practical application." The root of the objection to young section men lies quite as much in the fact that they do not "know the world" as it does in the fact that they are interested primarily in their graduate studies. The whole trend of the suggestions and criticisms is in favor of a closer connection between study and "life." The change desired is a change of emphasis, a change in the choice of illustrative materials and problems, and a change in modes of presentation. It is as desirable in general courses as in others and might be brought about without adopting any settled policy as to practical training.

The returns concerning advice on the selection of courses help to confirm the conclusion that the purposes of students are too often ignored. Only a little over half of the students

replied on this point, and of these one-third took courses on their reputation, one-sixth on information from the catalogue. Only a third of these students chose courses on advice or information from members of the Faculty.

Taken as a whole these returns from the questionnaires are convincing as to the need for an adjustment of college instruction to the aims and desires of our college population. We suffer still from the tradition that a college education is a preparation solely for a life of cultured leisure or else exclusively for the learned professions. It would be unfortunate indeed if we were to break with the past too abruptly or give up the aims and methods which have stood the test of time. But if we are to maintain the American college as an institution wherein fully half the students are to become business men, scientific workers, government officials, farmers, and the like, our views of college instruction cannot remain as simple and uncritical as they still are. We need not ignore the general purpose to help every college student to be an intelligent human being and a good citizen; indeed we must emphasize that purpose: but we can no longer defend unduly academic teaching nor pressure toward "scholarship" as such, on the ground that it is "good" for every student. We cannot treat students abstractly as "individuals." What they intend to do in life must have some weight with us when we advise them and when we frame the courses and schedules they are to pursue. We must build up a more complete and organic aim for college teaching, based on fuller knowledge of our pupils and the uses of our instruction.

In spite of the fact that there is a wide scattering of opinion in the replies to these questionnaires, a careful study of the returns shows how heavily they are weighted with the desire for instruction which shall challenge the student to greater interest, effort, and response. It is the artificiality

and remoteness of college work with which there is most discontent. Because students want the subject to be *brought home* to them, they call for closer contact with professors, for more experienced assistants, for lectures by business men, for more frequent reference to current events, and for most of the rest of the great variety of things they consider desirable. Through all the lists and tables of this chapter, there runs a note of appeal for the closer adaptation of college work to the needs and purposes of the individual student.

CHAPTER VI

METHOD

I. The Place of Method in College Teaching

There are no universal criteria of correct method in teaching, for teaching has no single character which can be so analyzed as to yield a fixed "form" or a set of technical rules applicable to every lesson or exercise. Principles of teaching are like principles of conduct or of style: they are statements concerning the nature of means and ends and of the adaptation of one to the other in the whole course of the teacher's work. Teaching, to be sure, must be judged at every point by its effects on the student; no method can be defended merely because it suits a purpose of the teacher other than the purpose to promote the process of learning in his pupils: but the process of learning, liberally considered, has so many parts and aspects and is so variously conditioned by the differing aims of the different subjects, by the differing circumstances of different schools, classes, and periods, and by the differing capacities of individuals and groups, that the method of a given exercise can be judged only in its relation to the total activity of which it forms a part. It is one contact among many between the mind of the instructor and the minds of his pupils. If it is well conceived and properly carried out, it forwards in some appreciable degree and in some particular way the student's progress in the subject. Only in the light, therefore, of an intimate and comprehensive knowledge of the complete plan of a course — the whole complex interchange between instructor and

students — can the method of a class hour be justly viewed.

For these reasons this chapter must be impersonal and without specific application. It can only set forth in general terms the problems of method in college teaching as this Inspection has presented them anew and from a different angle to the members of the Division of Education. It must accordingly risk the charge of being purely theoretical: but it is not in fact the expression of a theory; rather it is an objective description and discussion of the factors in a general problem as they have been strikingly impressed on our minds by our visits to classes in the various Economics courses, by the examination of class papers, outlines, and reading lists, by the comments of graduates occasionally consulted, by the careful analysis of examinations, by systematic reports on the study-habits of certain undergraduates, and by the returns to the questionnaires. We found it impossible to investigate single courses so fully as to feel justified in offering personal reactions on the methods of individual instructors; and we should have hesitated in any case to do so because of our lack of systematic knowledge of the subjects taught. In spite of the cordial invitation of the Department and of individual instructors to visit fully and to make our suggestions direct and personal, we can in consequence present only impersonal impressions and general conclusions.

It must be admitted that a treatment of this sort will have practical value only according to the extent and seriousness of the critical attention it causes to be focused on the factors of instruction most in need of it. What these factors are, in all its courses or in any, the Department of Economics can itself best determine. The Department can also best determine how to secure for these factors a new or an added emphasis. As we now see the problem, the submission for

departmental consideration of complete plans for courses, and visits by departmental committees, with frank discussion of the resulting impressions, suggest themselves as the best means for inducing wholesome experimentation in method; but it goes without saying that such action can be useful only when it is unforced, welcome to the instructor by reason of a genuine interest in its ends, and productive of no hasty effort to adopt methods or devices not fully incorporated in the whole scheme of the instructor's teaching. Permanent improvement in method must be based, we believe, on careful experiment with selected factors in teaching, seen in their relation to other factors; and this view we have tried to embody in the following discussion of our data in this field.

To secure these data we visited 25 classes, including 20 lectures or general class-meetings, and 5 section-meetings. Reports of these visits were filed at once, and later considered as a group and in connection with the data from the questionnaires and the other sources. The visits were made, for the most part, during the academic year 1914–15, especially in November and December, 1914, and January, 1915; also in the early weeks of May, 1914. They brought us into contact with the work of nearly all the undergraduate courses then in operation, specifically, Economics A, 1a, 2a, 3, 5, 6a, 8, 14, and 31. The visitor in each case had in hand the statement of aims submitted by the instructor in the course.

A grouping of the points mentioned in the comments on the visits and in certain returns from the questionnaires and from the other studies provides the headings listed below, each of which covers a part or aspect of the problem of college teaching, simply as teaching, although such headings also suggest, of course, problems of aim, of the organization of curricula, of administration, and of marking. The head-

ings are neither exhaustive nor mutually exclusive. The list is made up strictly from the data of this Inspection. Although the replies to the questionnaires are by agreement to be retained in confidence by the Division of Education, and the comments on the visits were also confidential, the summaries of the questionnaires, given in Chapter V may readily be compared with the list. Probably the list includes about all the chief factors in effective college instruction, and it includes many which are clearly recognized and admirably used in some or all of the courses we visited; but it doubtless misses altogether many factors of critical importance in particular courses. In no single exercise, perhaps in no single course, can all the factors listed be fully utilized. If the list and the discussion present adequately the various factors, each in its relation to the others, both those here considered and those that will occur to the readers of the report, this chapter will meet such expectations of its value as we could reasonably entertain.

NOTE. A statement of our general impressions from the visits may be of interest, despite the fact that it can have only the value of a rough concensus of personal judgments. The reports show that the instruction in Economics, viewed as a whole, and so far as it went, impressed us as excellent. The lectures, with few exceptions, we found clear, well-organized, stimulating, and forceful. Although in one or two instances they seemed to lack vitality and to win only a perfunctory attention from the students, in several cases they were as admirable for the power to arouse and hold the interest of the class, as for other good qualities. The sections we visited were noticeably less effective, in general, than the regular class meetings. In no case did the visitor consider the section work wholly unsuccessful, but in some of the sections the youth and the personal qualities of the assistants made the meetings far less profitable than they should have been.

It may also be worth while to mention here what seem to us to be the most promising directions for effort in the improvement of the undergraduate instruction given by the Department. These are: first, the abandonment, so far as may be possible, of sections, and in

courses where sections must be maintained, such measures as may be needed to secure assistants of greater maturity, fuller scholarship, and better training for their work; second, the adoption of methods for establishing closer contact between teachers and students (of which the Tutorial scheme now in operation is one) and especially for securing more frequent and more profitable reactions from the students, including fuller participation in class meetings; third, greater effort to devise and conduct with advantage, exercises which will bring the students into active contact with the problems of the subject, in their practical form. These proposals are discussed somewhat more fully below.

II. A List of Factors in College Teaching, Especially in the Teaching of Economics

A. Factors which affect the attitude of the student toward his work.

(a) The stimulation of purpose in general and the definition of specific aims, by

(1) Encouraging an understanding of the scope, object, and values of the course, by means of

(*a*) Advice in the selection of the course
(*b*) Printed statements about the course
(*c*) Personal conference with students early in the course
(*d*) Early discussion in class of the character of the work required and of its values

(2) Adapting the work, at least in part, to individual interests and needs, by means of

(*a*) Permission to choose, within limits and under guidance, the subjects of theses, special reading, and other independent work
(*b*) Personal conferences with students
(*c*) Discussion and criticism of tests and examination books, in addition to the return of marks.
(*d*) Personal guidance in thesis work, especially in the case of students unaccustomed to it
(*e*) Provision for supplementary and voluntary reading or other work beyond the requirements

(3) Relating the course to present problems of conduct or of thought, by means of

(*a*) Discussion of these problems in class meetings, and frankness on the part of the instructor concerning his own point of view

(*b*) Recognition of these problems in the choice of reading, thesis subjects, and other work

(*c*) Lectures by persons other than the instructor

(*d*) Credit in the course for participation in investigations and other projects under governmental, philanthropic, or business auspices

(*e*) Opportunity to use data from observation and investigation of activities, as in business and government, as well as from books

(*f*) The use of current literature as material for class discussions, reports, etc.

(b) The maintenance of attention and interest during class meetings, by

(1) Securing appropriate attention in advance to the topics to be considered during class meetings, by means of

(*a*) Assignments of special reading to be done in advance, and such tests or records of it as may be necessary

(*b*) Formulation of specific problems and questions to be considered in connection with the reading, or independently, and the requirement, at discretion, of written or oral reactions on them

(*c*) Encouragement, or assignment as a task, of the discovery by students of particular problems under a general principle, or of new facts and applications involved; announcement in advance of a date for discussion of these

(2) Connecting class meetings definitely and explicitly with the other work of the course, by means of

(*a*) Outlines and syllabi of the main divisions of the course, showing the connection of the lectures and class discussions with the general assigned reading and other independent work

(*b*) Reports in class from individuals or groups on reading or investigation on the topic in hand

(c) Use of required texts and other material in class as the basis of discussions or lectures
(d) Careful correlation of the lectures and the section meetings
(e) Discussion in class of written papers and other assigned work

(3) Making clear the purpose of each class meeting and assuring a measure of progress toward it during the hour, by means of
(a) Statements of purpose by the instructor and statements by students on question from the instructor
(b) Outlines on the board or on sheets distributed to the class
(c) Prevention of irrelevant discussion, question, and comment, and dismissal or postponement of problems not profitable to discuss — occasionally with assignments for reading or study to be done either by the class or by individuals or groups
(d) Summaries of discussion, by the instructor or by the students

(4) Providing appropriate opportunity during class hours for participation by the students, and making their participation profitable, by means of
(a) Discussion, kept relevant and stimulated by comment and question from the instructor
(b) "Socratic" development of the topic by question and answer
(c) Quizzes, oral or written; brief papers in class
(d) Encouragement of questions from the class
(e) Records on the board of diverse opinions or points of view presented by students, and discussion or lecturing on the issue thus formulated
(f) Extension of the discussion to the whole membership of the class; direction of discussion to the class, not to the instructor
(g) Encouragement for the presentation in class of instances, examples, applications, and problems discovered or formulated by the students

(5) Using skillfully and advisedly the opportunities of the instructor's position for personal influence, by means of

(*a*) Good lecturing, and skillful leadership in discussion

(*b*) Frank expression of personal opinion and point of view on issues of importance in or connected with the subject of the course

(*c*) Full and fair statement of contrary theories and points of view, in advance of criticism or comment

(*d*) Cordial recognition of divergent opinion on the part of students

(*e*) The use of concrete and familiar instances, examples, and cases; the encouragement of students in discovery and citation of these

(*f*) Unsparing attention to the personal difficulties of individuals, outside of class meetings

(*g*) Lectures by persons other than the instructor

(c) The encouragement and direction of effort in study and in other work outside of class, by

(1) Setting up reasonable standards of performance and maintaining them equitably, by means of

(*a*) Careful calculation of the time required for reading, theses, and other work

(*b*) Full statement of the requirements as to form in written work

(*c*) Coördination of thesis requirements with those of other courses, and consultation with students and other instructors as to the best times for the submission of written work

(*d*) Adequate directions for the use of sources, bibliographies, etc.; care in arranging for practical exercises; attention to library facilities, laboratory arrangements, opportunities for fieldwork, etc.

(*e*) Insistence on promptness in submitting work

(*f*) Personal conference with students in the course of their work

(*g*) Frequent use of tests, quizzes, brief papers, etc., with explicit statements, of the way in which these are to "count" in the final mark

(*h*) Specific references to reading, avoiding waste of time or neglect of work because of difficulty in discovering the application of assigned reading to the problem in hand

(2) Giving personal and adequate attention to the completed work submitted by students, by means of

(*a*) Full reading and personal comment in the case of theses and other written productions

(*b*) Personal conferences on the results of investigations and other practical exercises

(*c*) Care in grading

B. Factors which favor effectiveness of effort in the work itself.

(a) The general organization of the course to prevent waste of time and distraction of effort, by

(1) Coördinating the various requirements of the course, by means of

(*a*) Definite statements of the purposes in view, both for the course as a whole, and for separate assignments and exercises

(*b*) Outlines of topics for class meetings, showing the connection between assigned reading and the lectures and discussions. (See A, (b), (2), (*a*), above)

(*c*) Careful correlation of the lectures and the section meetings. (See A, (b), (2), (*d*), above)

(2) Defining exactly the work to be done (see A, (c), (1), above), by means of

(*a*) Printed statements in an outline or syllabus of the course

(*b*) Adequate directions for the use of sources, bibliographies, etc.; care in arranging for practical exercises; attention to library facilities, laboratory arrangements, opportunities for fieldwork, etc. (See A, (c), (1), (*d*), above)

(*c*) The use of forms for return of information of a fixed character

(3) Keeping closely in touch with the work of individual students, by means of

(*a*) Reports on reading and other work

(*b*) Personal conferences

(4) Managing tests, quizzes, brief papers, and examinations so as to show students their progress and help them to understand the subject, by means of
  (*a*) Care in choosing questions and topics
  (*b*) Discussion of the results in class and in conferences

(b) The management of class and section meetings to favor effective learning of various types, by
  (1) Assuring adequate and appropriate impressions when a set of figures, a graph, or other visual material is to be memorized, by means of
    (*a*) Distribution of printed sheets
    (*b*) Use of the blackboard
    (*c*) Use of colors, either on the board or on sheets
    (*d*) Use of the reflectoscope
    (*e*) Use of photographs
    (*f*) Insistance on accurate copying into notebooks of the material presented
    (*g*) Full explanation of the significance of the material
  (2) Assuring full assimilation of a definition, heading, quotation, or other exact statement to be memorized, either verbatim or in substance, by means of
    (*a*) Distribution of printed sheets
    (*b*) Use of the blackboard
    (*c*) Insistance on accurate copying in notebooks
    (*d*) Full exposition of the meaning
    (*e*) Discussion of cases, exceptions, opposites, etc.
    (*f*) Questions to test the students' grasp of the statement or their ability to apply it
  (3) Assuring complete understanding of a generalization, theory, point of view, interpretation, or other complex object of thought, by means of
    (*a*) Full exposition of the facts involved, preferably before the generalization itself is presented — preceded or accompanied, if possible, by actual observation of facts and situations, in addition to or in place of presentation by lectures or reading
    (*b*) Careful definition of the problem which the facts present, preferably by discussion — based

if possible, on participation in work which involves the problem in practical form

(*c*) Encouragement of attempts on the part of students to make the generalization for themselves; discussion of students' generalizations, either in class or in conferences

(*d*) Discussion of cases, exceptions, applications, etc.; quizzes, exercises, practical assignments

(4) Providing opportunities, incentives, and guidance for constructive thinking in class, by means of

(*a*) Full statement of the facts to be considered — sometimes by the students, sometimes by the instructor; use of the blackboard to bring out clearly the facts or their significance

(*b*) Definition of issues by discussion

(*c*) Reports of reading or fieldwork, or statements of point of view by individuals and groups

(*d*) Presentation of facts or convictions by "outsiders"

(*e*) Discussion in class of theses, or of passages from texts

(*f*) Discussion in class of required oral or written statements or arguments on unsettled problems

(*g*) Careful avoidance of dogmatism on the part of the instructor, without hesitation in expressing his own point of view

(*h*) The discussion of principles in their actual application to cases and situations, either real or hypothetical

(5) Using the lecture, discussion, quizz, recitation, and other modes of teaching with due regard to conditions, e. g., number in the class, their knowledge of the subject, etc., and to the character of the material to be considered, its difficulty, familiarity, the exactness with which it is to be recalled, etc.

(6) Making the physical conditions of the classroom as favorable as possible for attention

(c) The direction of work outside of class to favor effective effort, by

(1) Encouraging good management in reading, thesis-work, etc., by means of

(*a*) Early and complete statement of requirements. (See A, (c), (1), (*a*) and (*b*), above)
(*b*) Discussion of the character of the assignments and directions as to study and work. (See A, (c) (1), (*d*), above)
(*c*) Personal conferences
(*d*) Reports on reading, brief papers, outlines, quizzes, and other tests and reactions; discussion of these in class and in conferences
(*e*) Advice on review for examinations; the inspection of notebooks; discussion of habits of study and the organization of materials

(2) Using all opportunities to bring students into actual contact with the facts and problems of the subject, by means of
(*a*) Requirement of personal observation to supplement reading. (See A, (a), (3), (*c*), above)
(*b*) Participation in the work of governmental, philanthropic, and other agencies and institutions. (See A, (a), (3), (*d*), above)
(*c*) Investigations and other "projects" of an active sort
(*d*) Reports by students of instances, exceptions, and applications in contemporary life

(3) Encouraging constructive work and direct personal formulation of problems, by means of
(*a*) Permission to choose, within limits and under guidance, the subjects of theses, special reading, and other independent work. (See A, (a), (2), (*a*), above)
(*b*) Personal conferences
(*c*) Reports by individuals and groups in class. (See A, (b), (2), (*b*), above)
(*d*) Encouragement of supplementary and voluntary reading and other independent work

(4) Avoiding assignments for work outside of class which involve learning most effectively accomplished under direction, by means of
(*a*) Occasional use of class time for presentation of material for exact memorization. (See B, (b), (1), above)

(*b*) Occasional use of class time for memorization of verbal statements. (See B, (b), (2), above)

(5) Avoiding in class the presentation of material more economically studied outside of class, by means of

(*a*) Use of printed sheets, documents procurable by students, etc.

(*b*) Assigument as a task of written analysis or application of principles or problems not adapted to class discussion or not sufficiently important or difficult to warrant it

III. General Discussion

Such a list as this requires no explanation, for it presents no suggestion difficult to understand, however difficult some may be to carry out; but it may well raise issues on which there is room for difference of opinion. The whole first section of the list — "A. — Factors which affect the attitude of the student toward his work" — may seem to imply the notion that college instructors ought to court interest and cosset enthusiasm as if undergraduates were all spoiled children, incapable of independent endeavor. The second section of the list — "B. — Factors which favor effectiveness of effort in the work itself" — may imply the notion that the student is to have his work so charted and guided for him that it will be all "plain sailing." Of course no such notions are intended, for the first section is meant merely to suggest ways in which the student's general will to work may be harnessed, directed, or given greater leverage or more specific application, and the second to suggest ways in which his effort may be made to yield the best results. The college student who has no interest in study and would rather shirk or hunt "snap" courses than apply himself, presents a disciplinary problem, not a problem of method. Method must be based on consideration of the normal case — the college student who has good intentions, who is

interested and ready to learn, who does the best he knows how. Toward him the college instructor has by no means discharged his whole obligation when he lectures as well as he can, assigns reading from the best treatises on the subject, and provides a list of topics for theses. The methods of a primary school are hardly less appropriate in an American college than the "laissez-faire" methods of a German university. To stimulate purpose and define it, openly and without any attempt to interest the student "in spite of himself," or to supply conditions and directions for his work which shall make it possible for him to get a good return for his time and energy, need not mean the slightest lowering of standards. Indeed such efforts should make in every way for higher standards.

A suggestion very frequently advanced in the answers to the questionnaires, and consequently prominent in the list, is that more opportunity be provided for personal contact between student and instructor. What students want and seem genuinely to need is not contact with assistants or younger instructors, but with the men actually in charge of courses. The new system of Tutors will supply this need in part and for some men, but not as fully as would increased opportunity for conference with professors; and this need presents a problem by no means simple. It is easy to agree that conferences are profitable; but they are very time-consuming. The problem is at bottom a problem of general college economy — the problem of the large course. The best solution, without question, is to have the whole work of a course done by one man; nothing can compensate to the student for the almost inevitable lack of unity between the professor and the assistant. It would seem an excellent investment of college funds to permit professors in many cases to dispense with assistants and reduce the number of their courses. Ought not the work of a college instructor,

as a teacher, to be reckoned in any case by students rather than by courses? And would it be impossible to arrive by discussion, without elaborate inquiry, at a reasonable measure of the teaching burden one man ought to carry?[1]

There are good reasons, of course, why certain courses should be kept too large for a single man to give. In some cases it might be feasible to have identical courses given by two instructors, but this would introduce certain difficulties due to unavoidable differences of ability and of point of view between the two. Where sections offer the best solution, as they undoubtedly do, for example, in Economics A, there seems to be no way of avoiding their disadvantages except by direct effort to secure the best possible assistants and to unify their work by the most careful management. The proposal that assistants receive some training for their work, including a practical apprenticeship under supervision, deserves careful consideration. The provision of effective training for prospective college teachers is surely not impossible and would be welcomed by many of them with genuine interest.

Outlines and syllabi are mentioned as advantageous in several of the comments on the visits, and thus find appropriate places in the list. Their advantages are perhaps less obvious than their dangers. In some courses, syllabi may be undesirable because of the character of the subject. It is possible, also, to invite laziness by providing a syllabus which has much the character of a set of printed notes, and hence tempts students to undesirable "cramming." But a well devised syllabus will present topics rather than data and conclusions, and will serve rather as a map of the ground to be covered than as a means of getting over it without

[1] See Birge, E. A. "How Many Hours a Week Should be Required of Teachers in a University?" *Transactions and Proceedings of the National Association of State Universities*, v. 14, 1916.

effort. A syllabus may contain statements of the purposes of the course and directions for theses, field work, and exercises which will prevent misunderstandings and be of much value in guiding the students' efforts; it should serve to unify his impressions from the lectures and the reading; and by presenting specific assignments of reading in connection with each topic it may save time in class and in study. Its fundamental advantage is that it makes it possible for everyone concerned, but especially for the student, to know at every point just where he is in the course, where he is going next, and why.

One object of the questionnaires prominent in the minds of the joint committee which framed them was to discover to what extent instruction in Economics is missing the needs of individual students. What the questionnaires reveal on this point is presented in another chapter; but it must be plain to anyone who has had experience in college teaching that one of our difficulties as instructors — a difficulty not so pressing in any lower school — arises from the absence of continuous *reaction* from our students. We do not know what they are thinking about, whether or how they have grasped our meaning, what objections they might raise, what conclusions they are likely to come to. They have few opportunities for expression or for interchange of ideas with us or under our guidance. This means educational waste in college classrooms; and this is the reason why participation in class exercises is so desirable, personal conferences often so illuminating, and the purely educational use of tests, quizzes, and written papers, with discussion of the results, so profitable. We frequently miss the individual simply because we do not know, psychologically speaking, where he is. When classes reach a certain size it is impossible to know individuals intimately at all, and the best we can do is to tempt revealing reactions on matters of importance;

but this disadvantage of the large class ought to be emphasized on every possible occasion and we ought to counteract it in whatever ways we can.

Other sections of the Report present records to show that students do not give to their several courses anything like equal attention or effort. In part this is unavoidable and even desirable; but in part it is probably due to unevenness in requirements and to lack of calculation of the time reading ought to take, or theses, or practical exercises. College work is necessarily distracting in itself, and the student is further distracted by college activities even when he gives them only a reasonable amount of time and energy. It is surely important that our requirements be justly calculated, definitely set forth, and accompanied by directions so plain and ample that students need not waste time in wholly valueless efforts to find material which ought to be readily available. There is in this, of course, no disparagement of the value of an exercise involving the discovery by the student himself of new material or data adapted to his individual use but unfamiliar, it may be, even to the instructor.

In one respect college instruction seems to miss a fairly important opportunity to prevent waste of effort — it seldom differentiates clearly between the types of learning required of students. College instruction easily becomes predominantly verbal — its conditions favor lecturing and assigned reading, make difficult the observation of facts and constructive reasoning from actual data, and tempt instructors to ignore the requirements of the simpler types of learning, such as memorizing from sense impressions. Neglect to provide proper conditions for the memorization of visual material, or for verbatim learning of definitions, is, however, easy to prevent. Learning of either of these sorts may be conducted so that none but the lazy or defective

can avoid a good result. But it is much harder, as it is much more important, to bring students into actual contact with the facts and problems of a subject, outside of books.

In the social sciences college instruction seems peculiarly prone to lack of reality. This is in no sense a charge against Harvard courses in particular, for there are notable instances of provision in Harvard courses for contact with "outside activities"; but it is evident that this provision might be systematized and extended. Yet it is evident, also, that advance in this direction is beset with difficulties. It is easy to bring students into contact with sources in literature, and not impossible in history; laboratories and specimens bring the object of study actually before the student in the natural sciences: but it is possible to give a course, for example, in Labor problems, without bringing the students into any contact whatever with laborers, the labor-market, the conditions of specific industries, or any other facts or situations with which the subject deals. It is not only possible to do so, but to attempt in such cases to bridge the gap between "study" and "life" may seem decidedly dangerous. For in Economics, students can sometimes be given at best only a glimpse of the facts, and their impressions may be very misleading and unscientific. A proper variety of facts may, furthermore, be quite out of reach. There is a strong tendency therefore to avoid disaster by sticking to lectures, reading, and the study of documents.

But if college instruction is really to induce men to think, lack of reality is a fatal defect in it. The most educative thing a man can do is to observe facts for himself, define an issue from them, argue it out with his fellows, and apply his conclusions in action or in further thinking. The process of finding a problem in the facts, and solving it, awakens interest and illuminates the subject; to be successful in it breeds confidence and suggests new lines of inquiry; the

conclusions thus reached become vital and permanent possessions and affect conduct directly and forcefully. The most pressing need in the method of college teaching in the social sciences is therefore the need of devising "projects," "practical" exercises, and means of contact with the facts, institutions, conditions, and situations which the various courses treat. This need seems already to be recognized as imperative, as the appointment of Committees on Practical Training by the American Economic Association and the American Political Science Association and of a Committee on Field Work by the Association of Urban Universities would indicate;[1] but committee inquiries are less productive and more likely to be led astray by visionary leadership than is quiet experiment in the courses of a single department.

Practical training means in the present discussion simply a method of teaching, and may be used as such in a course which aims at an entirely "cultural" result, as, for example, a general understanding of the field of Economics as a whole. In a course which aims directly at preparation for vocational or other social activity, practical training would naturally be intensified and made continuous. The place and importance of such courses is discussed above, in the chapter on Aims.

Practical training may of course be overdone, and field-work developed as a method without discrimination. Devices and even so-called principles may become for the teacher as confining as tradition and a blindly accepted procedure. The only end in itself in education, as President Lowell has recently emphasized, is the student — but, it may be added, the student seen always in relation to the society into which his education is to fit him as a member.

[1] See also *The Public Servant*, a journal published by the Society for the Promotion of Training for Public Service, Madison, Wis.

The only secret in teaching is the secret of keeping clearly before one's mind the object to be attained and adapting one's procedure to it; but the object is complex and the adaptation of necessity varied and often delicate. The Division of Education may well disclaim any ability to point out to the Department of Economics a new or better road to success than the road it is already following — the road of careful analysis of the problems of teaching and of continued attention to the details of teaching, as its chief duty with undergraduate students.

CHAPTER VII

MARKING

I. A Study of a Set of Marks Given in Economics A

Through the courtesy of Professors Taussig and Day a study of marking in Economics A was carried out during the spring of 1913.

Ten mid-year books were selected and marked, after the usual careful discussion of standards, by seven instructors in the course. In each book there were ten answers, and each instructor gave a separate mark for each answer, as well as a mark for the book as a whole. The mark for the book was of course an aggregate of the ten marks for the answers. The resulting series of marks (seven hundred in all) was examined from several points of view, with the following results.

The study considered two main problems, namely, (1) what questions of the ten making up the books caused the greatest diversity in marking, and why? (2) how greatly did the instructors vary in their estimates of the books and questions, and incidentally, which instructors varied most from the central tendency?

Problem I

Which of the ten questions caused the greatest diversity of judgment, and why?

Sheet A (p. 199) contains in detail two samples of the data which provided the numerical basis for a solution of

this problem. In the case of each question we listed in the first column (headed Av.) the arithmetical mean of all the grades given to that question in each of the ten books. The figures given in the columns headed A–G state the deviation of each marker from the average presented in the first column. The last column gives the average of these deviations for the separate books, and the bottom line the average deviations for the several markers. By taking the arithmetical mean of all the deviations on each question, it is evident that we could secure in one figure an index to the variation caused by that question.

Sheet B (p. 200) shows the questions arranged in order of this figure. It will be seen that Question 4 caused the least diversity and Question 3 caused the greatest diversity. In Question 4 the average diversity was less than one grade on a scale of ten; on Question 3, nearly a grade and a half. On a percentage scale, the diversity on Question 3, Book VIII (the book which caused the greatest diversity on that particular question) averaged 17 per cent; one marker gave the answer zero, another seventy; and only two markers gave it the same grade. On Question 4, Book II, all the markers agree: this is the only instance of perfect agreement in the one hundred sets of marks.

The questions were:

1. Give examples of each of the following: vertical combination; internal economies; localization of industry; increasing returns.
2. In the case of a commodity produced under constant returns, does demand determine the price of the commodity or the quantity produced? Illustrate by diagram.
   Would your answer be the same if the commodity were produced under diminishing returns?
3. The cost of raising wheat on new land in Canada is said to be far below the average cost of raising wheat in the United States. Supposing this to be the case, can wheat grown in the United States continue to be sold in foreign countries in competition with Canadian wheat?

4. How would a great increase in the world's supply of gold affect: (1) The value of the gold dollar. (2) The value of the silver dollar. (3) The price of silver bullion. (4) The price of gold bullion.

5. State briefly what was the course of prices in the United States (*a*) between 1860 and 1870, (*b*) between 1900 and 1910. What were the causes of the price changes in each period; what evils arose; and how could the evils have been avoided?

6. Arrange the following items of a bank statement in their proper order:

Loans	$380,000
Bonds	50,000
Notes	50,000
Capital	100,000
Other Assets	40,000
Surplus	30,000
Undivided Profits	10,000
Real Estate	22,000
Deposits	350,000
Due from banks	10,000
Notes of other banks	3,000
Cash	35,000

Could this be the statement of a national bank, conducting its business in conformity to law?
Suppose the bank to sell bonds which on this statement are carried as worth $50,000; selling them at a profit of $1,000, and receiving cash for them. Rearrange the statement, and consider whether it could then be the statement of a national bank conducting its business in conformity to law.

7. How would a great increase in the production of gold in the United States affect:

The imports and exports of the United States;
The "balance of Trade" of the United States;
The price of foreign exchange in New York?

8. Suppose large remittances to be made by immigrants from the United States to their native countries: what consequences would you expect on (1) the stock of specie circulating in the United States; (2) the relation between merchandise exports and imports; (3) the gain which the people of the United States secure from foreign trade?

9. Which of the following would you reckon as part of the wealth of the country? as part of its capital?
   The Great Lakes,
   The Panama Canal,
   Deposits in banks.

10. Is the establishment of a manufacturing industry, brought into existence by a protective tariff, advantageous in that it creates a home market for agricultural products?

SHEET A

Problem I. Also Problem II, Section 1

The relation of the questions to one another in respect to the degree of variability which they cause in the marks assigned to them

Question 1

Book	Av.	A	B	C	D	E	F	G	Av. D.
I	8.7	1.3	1.7	1.3	0.7	0.7	0.3	0.3	0.9
II	8.3	0.3	0.3	0.7	0.7	1.3	0.7	0.3	0.6
III	8.7	0.3	0.3	1.7	0.3	0.3	1.3	0.7	0.7
IV	8.1	1.1	1.1	0.9	0.9	1.1	1.9	0.9	1.1
V	9.0	1.0	2.0	0.0	1.0	0.0	1.0	2.0	1.0
VI	7.3	0.3	0.7	0.3	1.3	0.3	1.7	0.3	0.7
VII	7.7	1.3	0.3	1.7	1.7	0.3	1.3	0.3	1.0
VIII	6.4	1.6	0.6	2.4	0.4	0.6	0.6	0.4	1.0
IX	6.7	1.3	0.3	0.7	0.3	0.7	0.3	0.7	0.6
X	8.4	0.6	0.6	0.6	0.4	1.4	0.6	0.4	0.7
Av.	7.2	0.9	0.8	1.0	0.8	0.7	1.0	0.6	0.8

Av. Dev. = .82

Question 4

Book	Av.	A	B	C	D	E	F	G	Av. D.
I	9.0	1.0	1.0	1.0	0.0	0.0	2.0	1.0	0.9
II	7.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
III	6.9	0.1	0.1	0.1	0.1	0.9	0.1	0.1	0.2
IV	1.6	1.6	0.6	2.4	0.6	1.6	1.4	0.4	1.2
V	8.9	1.1	1.9	0.1	1.1	0.9	0.1	0.1	0.8
VI	8.1	1.9	1.1	0.9	1.9	1.1	1.1	1.1	1.3
VII	6.9	1.1	0.9	0.1	0.9	0.1	0.1	0.1	0.5
VIII	5.1	0.1	1.9	3.1	0.1	0.1	0.1	1.9	1.0
IX	7.4	0.6	0.4	0.4	0.4	0.4	1.6	0.4	0.6
X	9.7	0.3	0.7	0.3	0.3	0.3	0.3	0.7	0.4
Av.	7.0	0.8	0.8	0.8	0.5	0.5	0.7	0.6	0.7

Av. Dev. = .70

SHEET B

PROBLEM I

Questions in order of the degree of variability which they cause

Rank	Question	A. D.	
1	4	.70	Least diversity
2	6	.77	
3	1	.82	
4	7	.84	
5	5	.86	
6	8	.92	
7	9	.95	
8	2	1.10	
9	10	1.15	
10	3	1.38	Greatest diversity

Chart I (below) presents the facts under the first problem in graphic form. A glance will show that the markers are in fairly close agreement on Question 4, whereas on Question 3 they spread out horizontally on almost every book.

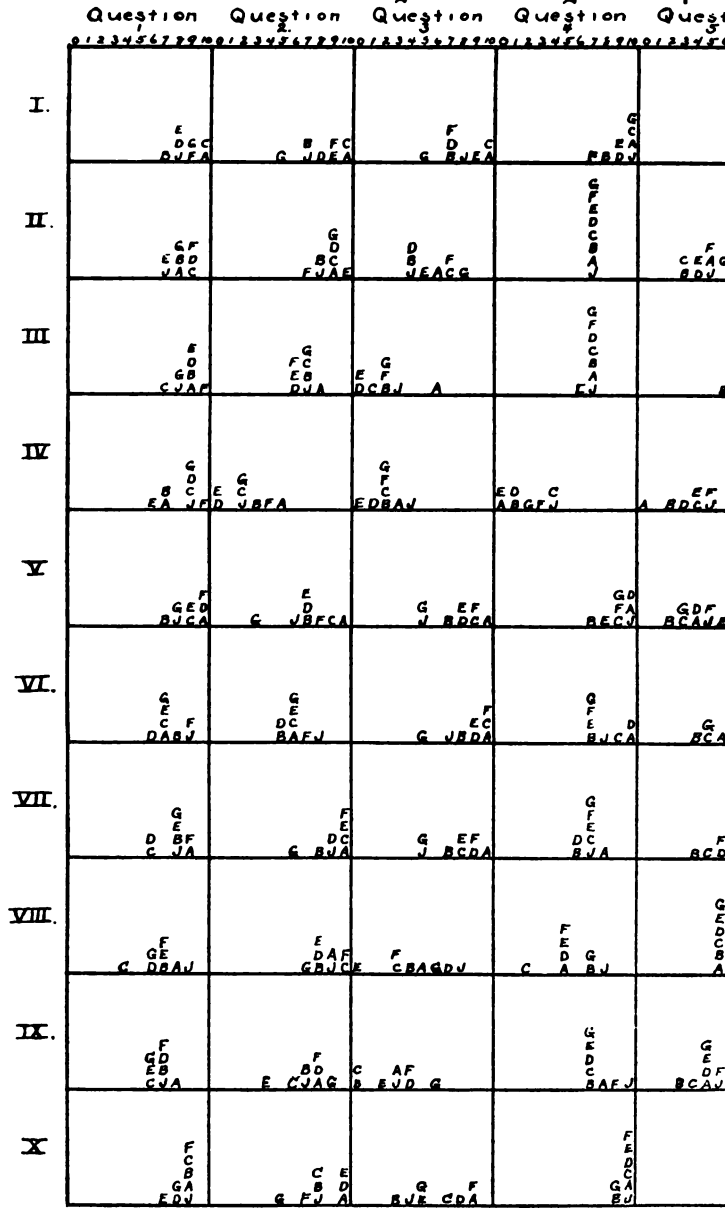
This Chart suggests also at least one reason for diversity in the marking of certain questions.

It will be noted that the uniformity of marking on Questions 4, 6, and 1 is a uniformity mainly in the giving of high marks. That is, these questions were favorable to agreement because the students found them relatively easy to answer. On the other hand, the diversity on Questions 10 and 3 is a diversity caused mainly by disagreement as to relatively low marks — an observation which is further suggested by the fact that the average mark on each of these questions (5.5) is lower than any other. This contrast would indicate that "hard" questions caused greater diversity of judgment than "easy" ones.

Other facts bear out this conclusion. Examining the chart, we may note, first, that only in one case was there marked diversity instead of uniformity of judgment on Question 4 — in the case, namely, of Book IV. Following the record of Book IV across the Chart, we discover that

C

The grouping of marks on each qu
the diversity caused by each ques



I.

on in each book. This chart shows
(Letters indicate instructors.).

Question 6.	Question 7.	Question 8.	Question 9.	Question 10.
1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
F E D G C V B A	E F B G U D C A	B A G B C F E V	F G D A C B V E	G D A F E B V C
E G C F A D V B	E B G A D V C F	G F D E A B V C	G F D A E C B V	D C D A G E V F
G E F C V D B A	G E D C A B V F	G E D J B C F A	D G A E C B V F	E D F C G B V A
G E F D V C A B	E D C G B V A F	G F E D A B G V J	F E C G D A B V	F C E B A G D V
E D : V F A B	G E F A D B V C	E D B A G V C F	G F D A C E B V	F E A B D C G V
G F E D C V B A	G F B D E V A C	G E F C D B A V	E F C D G B A V	G D B F C E A V
F E D G C V B A	F B D C G V F A	G E F B G V A D	G F E D B C V A	E B A F C G V D
E B F V A	G F E A D B V C	G E D A C B V F	G C F E V D B A	G F E B V D C A
F E G D B V A C	F E D C A B G V	E A G B C F V D	F D C G A B V E	D F E A B G V C
G F E D C A B V	E G B F D V C A	C F D G B E V A	G D C F E B V A	G E B D C V F A

the student who wrote this Book was generally a poor student: his grades fall low on most of the questions. We discover also that on almost every question he caused much variation in marking. Furthermore, the Chart shows a great preponderance, in general, of agreement in the marks that fall in the higher half of the scale, as against agreement in the marks that fall in the lower half. Four or more markers agree forty-five times in giving grades 6–10 inclusive, only seven times in giving grades 0–5 inclusive, and three of these instances are on grade 5. From tables such as those given on Sheet A we may secure a statement of this tendency in a single figure — the coefficient of correlation between the average grades on all the questions in all the books and the corresponding average deviations of the markers. This figure is: $r = -.401$, which shows that as the marks descend, disagreement tends to increase.

To the layman it is easier to see from the form of the questions themselves why Questions 4 and 6 should cause least diversity than it is to see why Questions 10 and 3 should cause greatest diversity; but it is the answers rather than the questions which must yield any further explanation of variation from question to question, and for such explanation as they may yield the whole conduct of the course must be taken into account. No doubt the instructors varied from one another in different degrees on different questions largely because they had different bases in experience for estimating what might justly be expected of any student on any question.

Problem II

How do the markers vary?

1. The tables used in Problem I offered some help in the solution of this second problem.

In these tables we had each instructor's deviation from

the average mark on each question in each book — 100 deviations for each instructor. The average of these deviations offered us an index of each instructor's tendency to vary from the central tendency of the group. By this index the instructors ranked as follows:

Rank	Instructor	A. D.
1	D	.83
2	E	.89
3	F	.91
4	G	.93
4	C	.93
5	B	.99
6	A	1.14

On the average, Instructor D varied from the central tendency less than one grade on a scale of ten, Instructor A varied considerably more than one grade. Instructor D agrees with the average seven times, Instructor A, four. Instructors E, B, and A each vary once by as much as four grades in a scale of ten.

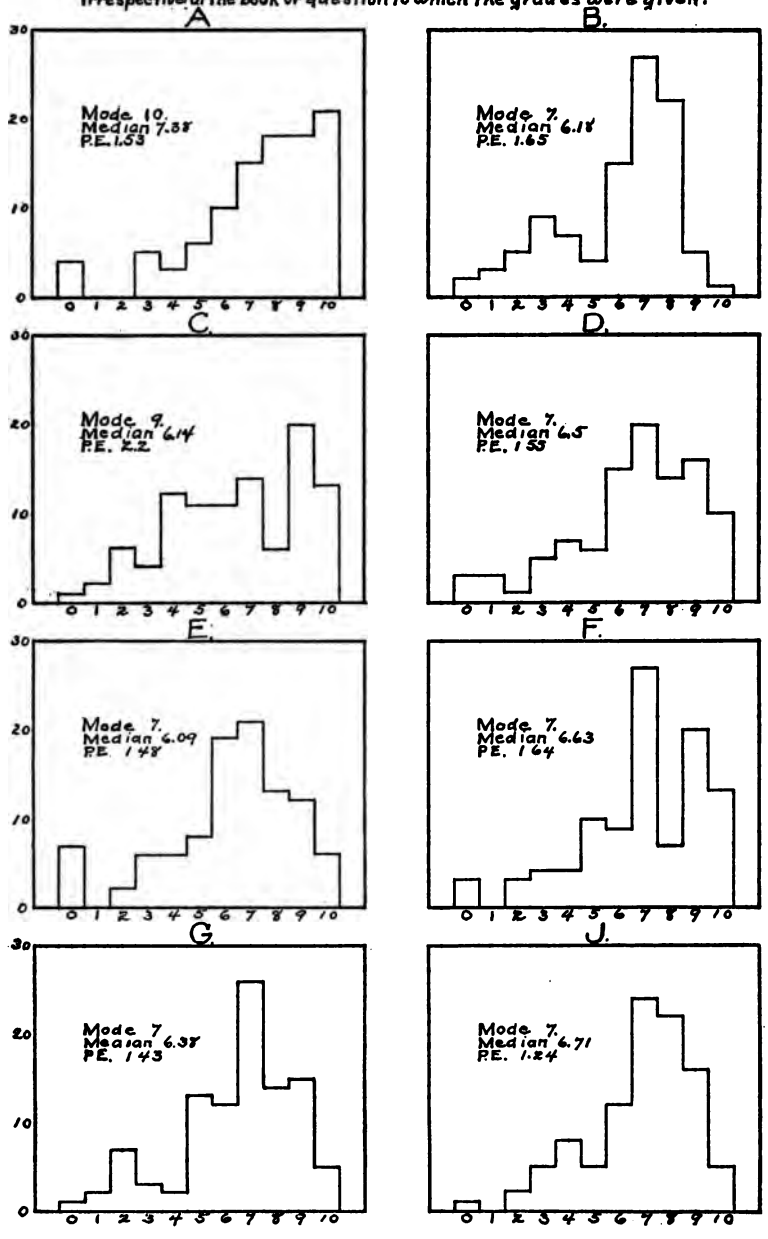
This index of variability does not show us, however, the actual variety of deviation in the case of any instructor — it fails, that is, to show for any instructor how erratic he was in his marking or whether he varied from the average by marking higher or lower. The extent and frequency (but not the direction) of each instructor's deviations could be seen, of course, by following his column through all the tables.

Some indication of these facts may also be obtained from Chart I, but it would be difficult to follow the symbol of any given instructor through the several distributions.

Chart II (below) gives us in a graphic summary further evidence on one of these points, viz., the tendency of any instructor to mark consistently "high" or "low," or to range his marks in any peculiar fashion along the scale. This Chart represents the distribution of all the marks

Chart II.

The grouping of each instructor's marks.
This chart shows how many times each instructor gave each grade, irrespective of the book or question to which the grades were given.



(100) given by each instructor, without reference to the question or book for which any were given. It shows, therefore, only a tendency to give more 4's and 5's, or more 9's and 10's than the group as a whole — i. e., variability in *range* of grades but not in the *placing* of them. Thus this Chart shows that A tended to mark higher than the average, since he most often gave the mark 10, but it does not show whether his 10's fell with the other 10's or were given to quite different questions or to the same question in different books.

2. A graph to show at what points, how far, and in which direction each instructor deviated from the central tendency in each of his 100 markings would necessitate a very complicated figure; hence for graphic representation of variability it seemed best to turn to the marks given to each book as a whole. These marks, of course, being aggregates, hide certain variations: agreement on the book may not indicate agreement on a single question; but variation on a book is a certain indication of variation on one or more questions and might be followed back to the fuller data given in the tables.

The character of the variation among the markers is shown in several ways. (a) Sheet C shows the variation in the *ranking* of the books on the basis of the marks given them by the several instructors. There is full agreement as to the worst book — Book IV. There is practical agreement as to the ninth book, and considerable as to the eighth. Thereafter there is little agreement except as to the book for first place, Book X, on which six markers agree, the remaining marker putting it second. Yet for second place six different books are chosen. It is plain that variation in judgment is not inconsiderable, in spite of careful effort to avoid it. (b) Sheet D shows the extent of variation in the actual grades given to the several books. In one case

SHEET C PROBLEM II, SECTION 2

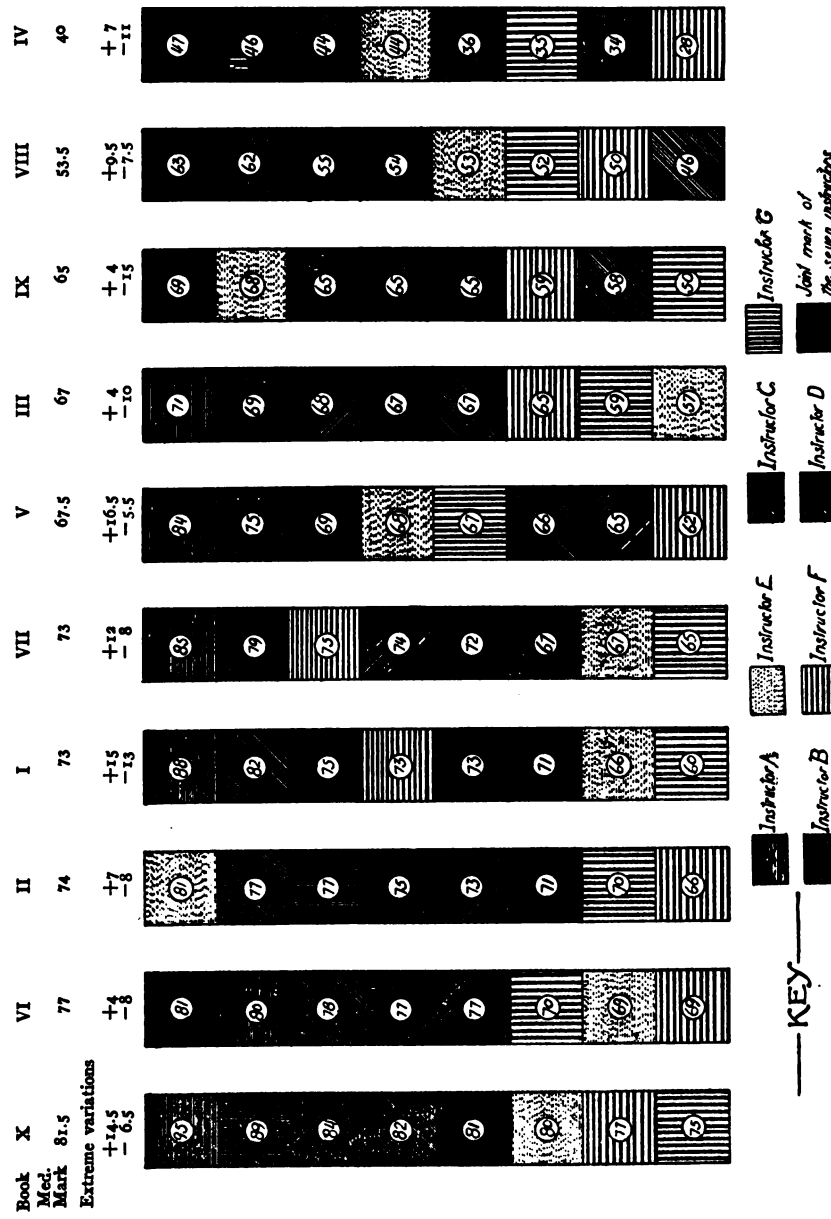
Variability of instructors, judged by the ranks (not marks) at which the ten books stand in their estimation

J		A		B		C		D		E		F		G		Med.	
1	X	1	X	1	X	1	X	1	X	1	X	1	X	1	II	1	X
1	VI	2	I	2	II	1	I	2	VI	2	VII	2	VII	2	X	2	VI
3	I	3	VII	2	VI	3	VI	3	VII	3	I	3	VI	3	VI	3	II
4	VII	4	III	4	III	4	II	4	II	4	VI	3	II	4	III	4	I
5	II	5	VI	5	VII	5	VII	4	I	5	II	5	III	4	IX	5	VII
6	III	6	II	6	I	5	V	6	V	6	V	6	I	6	VII	7	III
6	IX	7	V	7	V	7	III	7	III	7	III	7	V	7	I	6	V
8	V	8	IX	8	VIII	8	IX	7	IX	8	IX	8	IX	8	V	8	IX
9	VIII	9	VIII	9	IX	9	VIII	9	VIII	9	VIII	9	VIII	9	VIII	9	VIII
10	IV	10	IV	10	IV	10	IV	10	IV	10	IV	10	IV	10	IV	10	IV

	1	2	3	4	5	6	7	8	9	10
J	X VI		I	VII	II	III IX		V	VIII	IV
A	X	I	VII	III	VI	II	V	IX	VIII	IV
B	X	II VI		III	VII	I	V	VIII	IX	IV
C	X I		VI	II	VII V		III	IX	VIII	IV
D	X	VI	VII	II I		V	III IX		VIII	IV
E	X	VII	I	VI	II	V	III	IX	VIII	IV
F	X	V	VI II		III	I	V	IX	VIII	IV
G	II	X	VI	III IX		VII	I	V	VIII	IV
Med.	X	VI	II	I	VII	V	III	IX	VIII	IV

SHEET D — PROBLEM II, SECTION 2

The extent of variation among the marks given to each book, with graphic scheme to show instructors' rankings

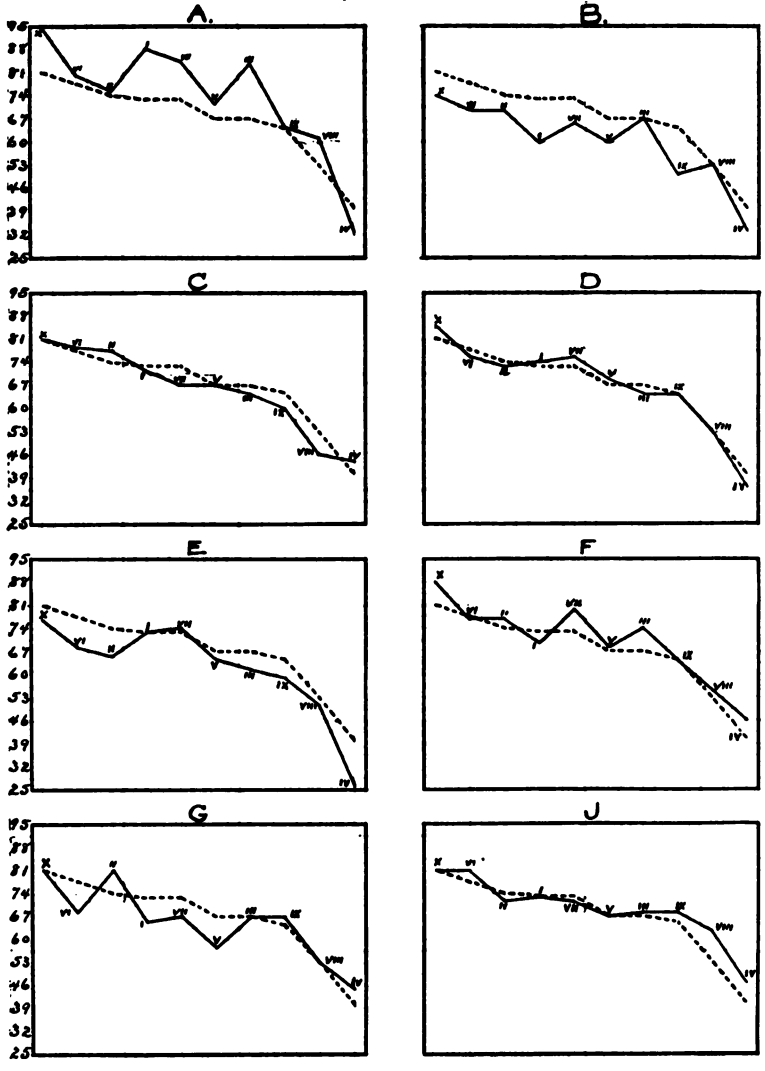


(Book I) this is as much as 28 grades. The least variation on any book is 12 grades (Book VI); this would make a difference equivalent to a full grade on the regular Harvard letter-schedule of grading. Such a difference might mean the difference between passing and failure, or between honors and a mere pass. Under certain circumstances it might determine a man's fate for the A.B., or for the degree with distinction.

This sheet gives us an opportunity, also, to follow a given instructor's markings through the series of books and to discover to what extent any given marker is an extremist, or erratic. Thus A is seen at once to be extreme in his gradings and a high marker: on five books he gave the highest grade, on two books he gave next to the highest, on one next to the lowest. B is almost as extreme as A, but at the other extremity. D is remarkably consistent in his close agreement with the median mark on each book. (c) Sheet E shows the position of each instructor in relation to the median mark on each book. The median is shown by the black line; to follow the deviations of a given instructor find his letter under each book. This Sheet repeats the data of Sheet D in another form. (d) Chart III gives the graph of the median marks on each of the 10 books, from the highest down, and compares this with the graphs of the several instructors' marks for all the books in the same order. By this Chart an instructor may readily follow his own deviations. (e) Sheet F shows the extent to which each marker tends to deviate from the central judgment for each book.

Chart III.

How each instructor varied from the median in marking each of the ten books.

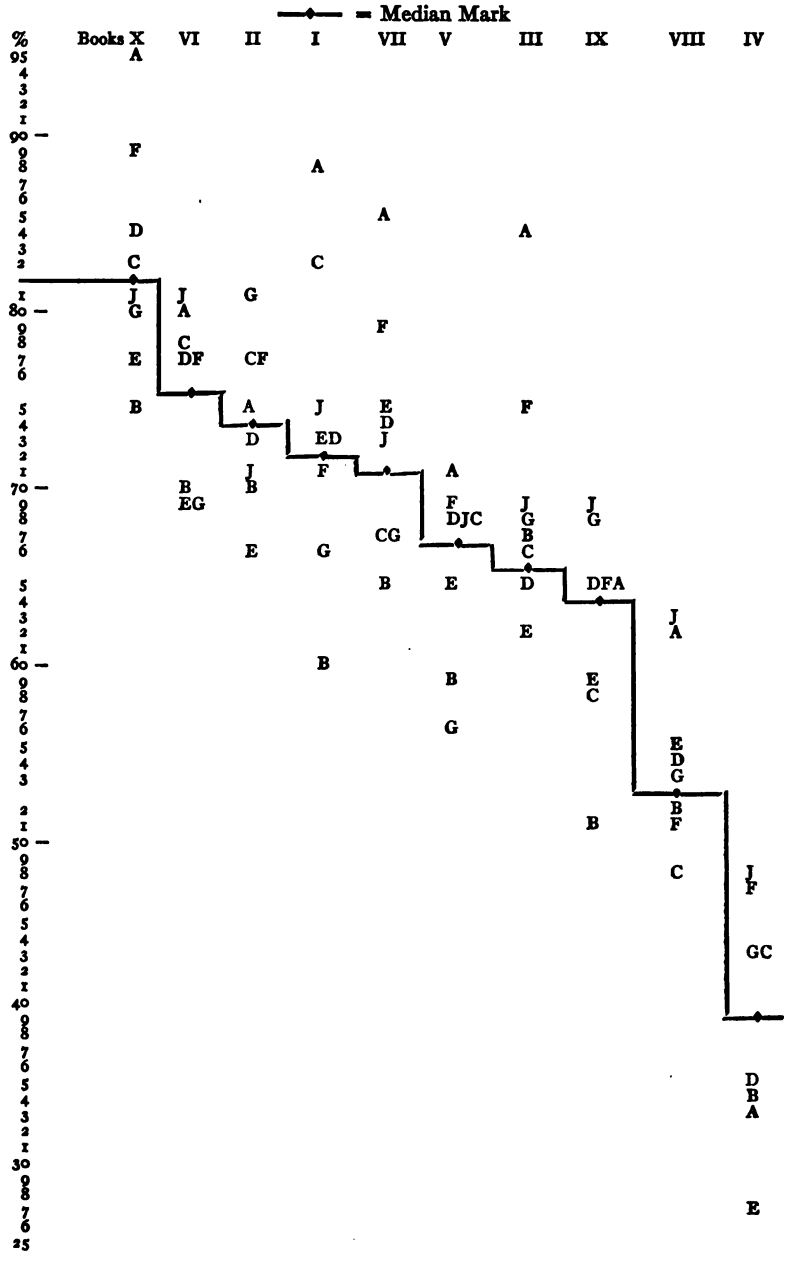


SHEET E

PROBLEM II, SECTION 2

Variability of Instructors

The marks assigned by each instructor to each of the ten books, shown in relation to the median mark for each book



SHEET F — PROBLEM II, SECTION 2

Distribution of all marks given to books

Book I . .	B 60 L.Q. — 69	G 66	F 71	D 73 M — 72⅓	E 73	J 75	C 82 U.Q. — 79	A 88
Book II . .	E 66 L.Q. — 70⅔	B 70	J 71	D 73 M — 74	A 75	F 77	C 77 U.Q. — 77⅓	G 81
Book III . .	E 62 L.Q. — 65	D 65	C 66	B 67 M — 67	G 68	J 69	F 75 U.Q. — 69	A 84
Book IV . .	E 28 L.Q. — 34	A 34	B 35	D 36 M — 39	G 44	C 44	F 47 U.Q. — 44	J 48
Book V . .	G 56 L.Q. — 59	B 59	E 65	C 68 M — 66	D 68	J 68	F 69 U.Q. — 68	A 71
Book VI . .	E 69 L.Q. — 69	G 69	B 70	D 77 M — 75⅓	F 77	C 78	A 80 U.Q. — 79	J 81
Book VII . .	B 65 L.Q. — 67⅓	C 67	G 67	J 73 M — 71½	D 74	E 75	F 79 U.Q. — 76½	A 85
Book VIII . .	C 47 L.Q. — 50¼	F 51	B 52	G 53 M — 52¾	D 54	E 55	A 62 U.Q. — 59	J 63
Book IX . .	B 51 L.Q. — 56½	C 58	E 59	F 65 M — 65	A 65	D 65	G 68 U.Q. — 67	J 69
Book X . .	B 75 L.Q. — 79	E 77	G 80	J 81 M — 81½	C 82	D 84	F 89 U.Q. — 84	A 95

The Interquartile Range is taken as a zone of sound judgment. The distance (on the scale of grades) by which any instructor's mark on any book falls outside this zone can be then seen. Thus on Book I, B's mark is 9 points outside the Interquartile Range, G's mark 3 points outside. The sum of these distances for each instructor, shown on Sheet G (p. 210), presents in a single figure his tendency to differ from the group. This figure gives a ranking of the instructors as to variability on the whole series of books, which may be compared with their ranking as to variability on the questions (see above). The following table is a rearrangement of the results obtained from Sheet G.

		Outside of the Interquartile Range			
Rank	Marker	Number of Times	Points	Above	Below
1	D	1	1	—	1
2	C	3	18 7/12	3	5 7/12
3	G	6	1	4 3/8	10 1/8
4	F	5	5 1/2	17 1/2	—
5	E	5	20 7/8	—	20 7/8
6	B	6	27 1/2	—	27 1/2
7	A	8	51 1/2	50 1/2	1
Totals			141 9/12	75 3/8	66 1/12

(f) Sheet G and the table just given show roughly the relation between variability in grading and the tendency to grade higher or lower than the group. The two most variable markers are sharply contrasted, A varying 50 points above the group to 1 below it, B varying altogether below. There is a similar contrast between F and E. G and C, who are not extreme in either direction, tend to vary further downward than upward, and if we omit the extreme case furnished by A, this is the tendency of the group as a whole. This suggests the conclusion that a severe judgment tended to lead to greater divergence than a lenient judgment; i. e., that the mood of condemnation made for inaccuracy, or possibly, that having decided against an answer the instruc-

tors saw less need for care in rating it. Chart I confirms this suggestion. In 38 of the 100 squares on the chart there is indicated an agreement of at least three markers and a divergence of at least one marker by as much as 3 points, as for example, in the square giving the marks on Question 3, Book III. Studying these divergences as the extreme cases

SHEET G

PROBLEM II, SECTION 2

Divergences outside the Interquartile Range

Book	A	B	C	D	E	F	G	J
I	+9	−10	+3	—	—	—	−4	—
II	—	−1⅜	—	—	−5⅜	—	+3⅜	—
III	+15	—	—	−1	−4	+6	—	—
IV	−1	—	—	—	−7	+3	—	+4
V	+3	−1	—	—	—	+1	−4	—
VI	+1	—	—	—	−1	—	−1	+2
VII	+8½	−3⅛	−1⅛	—	—	+2½	−1⅛	—
VIII	+3	—	−4¼	—	—	—	—	+4
IX	—	−6½	—	—	—	—	+1	+2
X	−11	−5	—	—	−3	+5	—	—
	+50½	—	+3	—	—	+17½	+4⅜	+12
	−1	−27½	−5 7/12	−1	−20⅜	—	−10⅛	—
Totals .	51½	27½	8 7/12	1	20⅜	17½	15	12
Rank . .	7	6	2	1	5	4	3	—

Plus (+) indicates divergence *above* the Interquartile Range.
Minus (−) indicates divergence *below* the Interquartile Range.

which call for some explanation, we find that 29 of them are divergences downward, 17 divergences upward. There are six divergences of 4 points downward, three of 4 points upward; two of 5 points downward, one of 5 points upward. The total variation downward from these selected modes is 97 points, the total upward 56 points. Divergence downward evidently tended to be greater than divergence upward.

The number of books was too few to permit any general answer to the question, "Does a poor book cause greater variation than a good one?" From what has been shown as to poor answers and as to severe judgments, it may be inferred that it does.

II. Conclusions from the Study of Marks Given in Economics A

The conclusions of fact from this study may be stated as follows:

1. There was much diversity of marking, both on questions and on books, in spite of effort to avoid it.

2. Some markers showed a persistent tendency to mark either high or low; others were erratic; some varied very little from the central tendency.

3. The variation on books was sufficient to be of grave consequence to the student.

4. Poor answers caused greater diversity than good ones.

5. Severe judgments tended to cause greater divergence than lenient ones.

In so far as these conclusions hold for college marking in general, they may fairly be said to make clear two of its main requirements: first, that instructors use every means to reach clear agreement on standards and to steady their judgments in applying them; second, that they grade with special care answers which seem to them inadequate.

In the general discussion which follows, the practical problems which these statements suggest are considered at some length. It is obvious that no interpretation of the conclusions would be safe without a broader basis of fact, if this study were unsupported by others of similar character. But the problem of marking has been studied extensively enough (as the references given below make evident) to

render it unnecessary to gather further data in this particular instance, although other studies would unquestionably be worth while. It goes without saying that there is no intention to imply the slightest lack of effort to attain accuracy of marking in Economics A or to suggest that the safeguards discussed are either unknown to, or neglected by, the instructors in that course. This chapter of the Report is written in the belief that a general treatment of the problem of marking in college courses, based on the data presented above, may be of interest, and possibly of profit.

III. General Discussion

An economist, Professor F. Y. Edgworth, published in the Journal of the Royal Statistical Society, in September, 1888, one of the first thorough treatments of variation in the marking of examinations. There is a certain poetic justice in beginning this discussion by a citation from his paper. The statement to be cited sums up, in a sense, his "human" conclusions, and presents at once the central problem in college marking. It is to the effect that there are some honor men who "like the unsung brave 'who lived before Agamemnon,' . . . are huddled unknown amongst the ignominious throng, for want, not of talent, or learning, or industry, or judgment, but of luck."

This is the root of the evil in the marking system — that marks are so much a matter of chance. Professor Edgworth proves that all marks — even those on large aggregates — are as likely as not to be three per cent out of the way. Any mark, even under generally favorable conditions of marking, may deviate from the "true" mark by nine per cent. That is, there is a probable error of three per cent, a possible error of nine, in assigning a mark as representative of the student's real proficiency. These errors are reckoned

"from the supposed ideal mean which would be presented if a large number of competent sets of critics were to examine the work." The difference between two examiners is likely to be much greater; a given examiner may vary very widely from another who might have been in charge. (Many recent studies, like the one here reported, confirm this conclusion.[1]) Our students are not wholly unjustified, therefore, in looking on the attainment of academic credit as a game, a gamble, in which merit counts only roughly, fortune being the real arbiter at critical points.

To the student who has had bad luck, there is small comfort in the advice that next time he make so much greater effort as to raise himself beyond the possibility of disadvantage from even a nine per cent error. Perhaps he has

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MEYER, MAX, "Experiences with the Grading System of the University of Missouri," *Science*, v. 33, 1911, p. 661.

RUGG, HAROLD O., "Teachers' Marks and Marking Systems," *Educational Administration and Supervision*, v. 1, 1915, p. 117.

SIES, R. W., "Scientific Grading of College Students," *University of Pittsburgh Bulletin*, v. 8, 1912, No. 21, p. 171.

SMITH, A. G., "A Rational College Marking System," *Journal of Educational Psychology*, v. 2, 1911, p. 383.

STARCH, D., "Reliability and Distribution of Grades," *Science*, v. 38, p. 630.

already done the best he can. Nor is it much more comforting to assure him that "he is playing a game in which superior skill must make itself felt in the long run." His failure to get a "C" or a "B" may put him out of the game; or his sense that the game is one of chance may tempt him to try it again without much effort to improve his skill, in the hope that next time his luck will run the other way. It is natural to assign to merit whatever one has achieved, to fortune whatever one lacks of achieving what he thinks he merited. Although the incertitude of marks is not the only cause, nor always the chief cause, of that unwholesome attitude toward study which is so often noted and deplored, it is unquestionably one of the causes, and one for which the student himself cannot be held to blame.

Not that instructors are to blame, if they make an honest effort to mark justly. Safeguards against error have yet to be more fully developed and tested for general use, before anyone can be accused of neglect because his marking is somewhat at fault. The error of three per cent calculated by Edgworth is an error to which an uncorrected mark is inevitably liable, considering the frailty of human nature and the imperfection of the data on which marks are given. Disagreement among instructors is natural. Increased divergence in the lower part of the scale is also natural, since an inadequate answer gives us fewer data on which to base conclusions. But there is no escape from the duty of discovering and testing all the available methods of rendering marks more accurate.

For marking cannot be avoided, nor can the importance of accuracy in marking be denied. Every mark we assign is important, as an item in an aggregate which, for the student, determines success or failure. Even a low mark, on a poor answer, ought to be assigned with care. The question is, what safeguards against inaccuracy all along the line —

from the mark on a single examination answer to the mark in a course — are worth trying?

Efforts to avoid inaccuracy may be divided into three classes, not unrelated nor exhaustive of the possibilities, but worth distinguishing: (1) efforts to simplify the data on which judgments are to be passed; (2) efforts to avoid error in the judgments themselves; (3) efforts to correct error in the final returns. The opportunities now apparently open under each of these heads will be discussed in order.

1. *Efforts to simplify our data.* The prospect of securing standard tests in college subjects is very remote. Accomplishment in a college subject is a product so complex that no series of simple or uniform reactions can adequately represent it. We cannot avoid variation by securing data which will permit almost mechanical grading, as we can in the case of elementary arithmetic; nor by using a fixed series of questions to which "standard" answers might be given. Our data, consequently, will always call for the exercise of judgment.

If it were at all possible, in such a course as Economics A, to work out a series of problems calling for definite and easily graded reactions, which might be used as a fair measure of accomplishment, it would of course be well worth while to make the attempt. If a test could be devised such as to give reasonable assurance that 100 per cent in passing it meant actual achievement of a high order, that 50 per cent meant half that achievement, and that error in assigning the grade could rarely occur, we should have an ideal instrument of measure. To fulfill these requirements, the test would have to consist of problems to which numerical or very simple and definite verbal answers could be given; yet it would have to be comprehensive, and every problem would have to be so constructed that mere guesswork or the application of simple common sense could not

result in a correct solution. Obviously there is not much chance of securing more than a few sets of problems even approximating these specifications. If they were used as examinations, it would take a professional tutor a very short time to drill his clients into an easy "mastery" of the course. All that it is possible to recommend is that examination questions be so constructed as to favor definiteness and simplicity in the answers as often as may be; but it may be added that a test of the kind described (or anything like it) might be very useful and informing as a supplement to examinations or as a means of research.

Examinations do not give us, to be sure, the only data on which our marks are based; but our estimates of worth in other cases (theses, exercises, laboratory and field work) are not less subject to error, but more. There is a fertile topic for exact and painstaking investigation in the question, How much should examinations count in the final mark, and how much any other sort of evidence of accomplishment? Other things equal, any piece of work which is to be marked ought to be presented in a form as favorable as possible to accurate estimate of the accomplishment it represents. But it is clear that we cannot mechanize the work we ask students to do, merely in order to enable us to mark it justly. A piece of work of the greatest value to a student may be the hardest to mark; yet students pay most attention to work on which they are to receive grades, and the incentives which grading offers cannot be neglected. It must be admitted that the effort to simplify data for the sake of avoiding error in marking is not so important as the effort to secure data which shall signify the full character of the accomplishment we wish to rate.

On this score it would seem worth while to distinguish at least four kinds of data: (1) answers to pure "memory questions"; (2) the solution of test problems set by the

instructor; (3) free expression on topics chosen by the instructor or the student; (4) constructive treatment of complex practical, scientific, or literary problems. Examinations give us for the most part data of the first two kinds; essays, theses, laboratory exercises, and fieldwork, of the last two. In most college courses, we need data of all these classes in order to test accomplishment; but power can best be evidenced by data of the last three. It would seem advisable to devise as many "projects" as we can in connection with any course (that is, practical exercises involving the independent collection, handling, and interpreting of facts in the field the course covers); and such work ought to be given much weight in the final mark: yet it is not easy to grade. As we develop a larger number and variety of practical exercises to take the place of a part of the present lecture-text-book-test routine, we shall be increasing rather than diminishing the inherent difficulty of accurate grading.

2. *Efforts to avoid error.* There is the greater need, therefore, of effort to steady and correct our judgments. If we could look forward to the development in college subjects of scales, analytical scorecards, or other objective standards, such as are already used to good effect in handwriting, spelling, and certain other subjects of the elementary school, we might be content to do as well as we can without other aids until that royal road should be opened. But any such expectation must be very narrowly limited. The variety and complexity of work which is really to exhibit the power achieved in most college courses puts an objective standard of grading out of the question. We must fall back on means of rendering subjective standards more reliable.

To this end nothing can obviate the necessity of care and of honesty of purpose, nor diminish the value of experience. If a young instructor is working alone, there are not, of course, many opportunities for him to improve his judg-

ment, except by reflection on his own performance, which is always worth while. (For purposes of comparison a collection of theses, reports, and examination books illustrating the various grades would probably be useful — an informal objective scale, which might profitably be discussed, in certain cases, with the students in the course.) In large courses, however, where several instructors mark the same or similar work, conferences on standards, the multiple reading of doubtful books, and the discussion of selected books and answers are available as means of acquiring steadiness of judgment, although such efforts cannot of themselves guarantee agreement. It ought to be possible, also, to make the marks on the first tests in the course show the tendency of each instructor, so that he may take warning and accommodate himself to the majority judgment, as safer than his own. (Probably the mode is in many cases the safest standard to take for this purpose, since it represents an actual agreement. A mode discovered on a second marking, after full discussion, could be accepted as almost objective in its validity.) College instructors in general ought in all probability to spend more time and effort in the attempt to make their marking accurate; and several "sessions" early in the year, spent on the serious study of returns in test cases, might save much time later on — to say nothing of the contribution they might make to the achievement of the real aim in view.

In anticipation of difficulties in the marking of examinations, no single safeguard is more useful than full analysis of the desired answers. What each answer is to contain or attest ought to be known in advance, and the proposed value of the answer in the whole book, and of each element in the answer, carefully considered and discussed. The larger the number of elements to be taken into account, the smaller will the error of judgment on the aggregate be likely to be.

The advantages of questions as tests of accomplishment must be balanced against possible disadvantages due to probable difficulty in the marking of the answers. In general, it may be said that the making of examinations is quite as difficult and important as the marking of them.

The assignment of values to questions is in itself a special problem. Professor Inglis [1] suggests that values ought to be equated on the basis of actual performance by the students. A question that proves in fact twice as difficult as another question ought not to have the same weight in the total; and on the ground that we cannot indict a whole class of laziness, inattention, or dullness, it would seem that the "hard" questions ought to count less than "easy" ones. This would mean, of course, a general raising of examination grades; but not necessarily the passing of more students nor the granting of more honor grades, since these matters may be otherwise controlled.

3. *Efforts to correct error.* After every practicable effort has been made to render judgments accurate, it may still be supposed that the final grades are subject to error. There remains the possibility of correction according to a theoretically determined standard. An ideal grouping may be constructed to which the actual grouping shall be made to conform, and this procedure can be justified on the ground that it will result in a rating more accurate than that provided by any given series of marks. The standard provided by the Probability Curve can be accepted only as a starting point or remote background; what is needed is a standard derived from a sufficiently large number of marks by a sufficiently large number of competent critics, assigned to students of the same general type in the given subject. In default of such a standard it would seem dangerous to make

[1] INGLIS, A. J., "Variability of Judgments in Equating Values in Grading," *Educational Administration and Supervision*, January, 1916.

drastic general use even of a skewed curve determined on purely theoretical grounds. A theoretically determined curve may take account of the selective influence of progress through school to college and may thus be available for use in large general courses, but it cannot be applied to marks in a section nor in a small or advanced course. Even a curve derived from several general courses does not necessarily fit the probable distribution of ability in a group electing a particular subject; nor can the accumulation of marks over a series of years be subject to criticism if it does not conform to such a distribution, unless it can be shown that no systematic selective influence has been continuously at work on the group in question. A good standard distribution for a particular course might be found in the whole series of marks in other subjects obtained by men electing that course; and such distributions might well be made at intervals for all the larger college courses.[1]

If a given course ought by reason of its subject or aim to be easier (or harder) than an average college course, some adjustment in the standard would have to be made; also, a distribution derived from marks in other courses in the same field might in some cases seem more useful than one derived from courses in other fields.

The disadvantage of any such standard is that it ignores, or rather directly counteracts, the effect of good teaching. If we aim at a certain minimum accomplishment for every member of a course, it is a confession of failure to admit that any predetermined percentage of our students cannot possibly reach it. Our business is to correct the chance distribution of ability among them by laboring mightily with those who could not succeed unaided. A student aroused to interest by good teaching may justly complain if, after

[1] Edgworth, in the article referred to, p. 624, gives a method for correcting an actual series of marks by the use of a standard or ideal distribution.

doing his best under sympathetic direction, he is failed on the ground that a certain number of men in the course ought theoretically to receive E's. In the last analysis the issue is between the instructor's estimate of accomplishment as it is evidenced by examinations and other data, and the theoretically probable accomplishment of the students he deals with. How much shall the deviation of his grouping from the normal grouping cause him to distrust his own judgment? The distortion of a series of marks honestly and carefully given cannot be recommended as a good policy; yet continuous divergence from a standard distribution properly determined would argue either marvelous and improbable efficiency in teaching or an unusual and equally improbable selection of able students — supposing the divergence to be upwards on the scale. (A divergence downward would be more disturbing to the instructor as to his teaching and the ability of the students electing his work, more comforting to him as to his standards.) If neither of these conditions is likely (as neither usually will be), the only conclusion the instructor can come to is that his standard of accomplishment is unduly low (or high). He ought therefore to reexamine his standard, and make his course more (or less) exacting.

It is fair, then, to say that standard distributions are proper instruments for the use of instructors in the wholesome process of critical examination of their own work, and that their effect ought to be apparent in the general leveling of requirements in courses; but that they ought not to be applied indiscriminately to the correction of every set of marks.

This conclusion stands in direct contrast to the conclusion reached in several recent studies of college marking — namely, that students should be *ranked*, not marked, with the corollary that the distribution of ranks should

conform to the normal distribution. The general procedure advocated is that the best performance should be given the highest grade and the other performances rated in order below it; if the distribution thus produced is not normal, it should then be corrected by reference to the standard curve. The advantage claimed for this method is that it avoids the inaccuracy arising from the attempt to rate a student's accomplishment by referring it to a supposed objective standard which does not in fact exist. We believe, however, that greater injustice and confusion will result from this method than from careful effort to estimate each individual's accomplishment in terms of a standard made as objective as possible (or defined as clearly as possible) by discussion, analysis of results, and comparison of grades. To give any student a mark which indicates only that he stood last, or twentieth, or first, in a class of one hundred is neither just nor informing. The student (and everyone else) inevitably takes the mark to indicate achievement in the subject. Unless we define how well the hundred did, it means nothing to say that A was first or last; and to give A the grade which means failure, merely because he was last, may work gross injustice. Vague as our standards may be, there is more promise of success in the effort to define them and apply them with care, than there is in the proposal that we ignore them.

In accepting a *relative* standard there is, moreover, a subtler danger still. To be assured that an "A" invariably means that a student is among the highest two or three per cent in his group provides, in one sense, to be sure, an exact meaning for the mark — but it tells us nothing about the actual level of achievement in the group as a whole and may lead us therefore to accept as a definite estimate of proficiency a mark the meaning of which varies in reality with every instructor and every class. And when an

instructor knows that his marks will be considered "satisfactory" if they are distributed in the "normal" proportions, he may well be tempted to give up all reference to an "abstract" standard of achievement and hence to be content with whatever proficiency his instruction produces. Reference to an "objective" standard is salutary to student and instructor alike. There is no safety in marking except through the effort to define a standard and to mark as justly as may be in terms of it. The "normal distribution" serves best as a basis of criticism for the standard an instructor has actually in mind.

There is one possible precaution against error which our Harvard marking system does not favor — namely, the building up of the final grade from a large number of items. An aggregate is much less liable to error than a single item: hence a final grade reckoned from a number of grades for single points (papers, exercises, examination questions) is more likely to be just than a grade assigned at a broad guess. But computation of grades means the use of numerical values, and we use an official scale of letters not defined in numerical terms. This raises the general question of the most advantageous number of gradations in the marking scale. There can be no doubt that the percentage scale contains too many gradations for effective use: indeed, teachers fail to use more than the main points on the scale, as the clustering of their marks around the natural modes (the fives and tens) bears witness. But a scale with ten gradations is apparently quite usable; and such a scale may be expressed in numbers. Using a scale of ten we may construct a final mark which represents an aggregate of single impressions rather than a single (and very general) impression; and when this aggregate covers a considerable number of items the chances of error are much reduced.

Against this procedure it may be urged that the grouping

of students into five main classes (A's, B's, etc.), with due regard to the conformity of our grouping to the ideal grouping, is more likely to avoid error than is any other method. It is true that broad distinctions are easier to make; and final rating in terms of such distinctions is therefore desirable. But in the doubtful and border-line cases ("high C" men, "low C" men, et al.) we are thrown back on some method of checking up our estimates. Our distribution may conform in general to the ideal grouping, but who shall tell whether we have dealt justly with the individuals thus grouped?

Accuracy in marking often demands the combination of separate items, the computation of an aggregate from weighted parts, and other calculations; and this demand cannot be fulfilled if we use only relative ranks expressed by letters.

In the end it must be recognized that there is no short cut to justice in marking. Care and effort are essential everywhere. Fundamental in the whole business is the necessity of organization in the work of the course itself: the fitting of requirements to the limitations of the student's time and to his stage of advancement; the most advantageous balance in the assignment of reading, conferences, papers, practical exercises, and other work; the best arrangements for guidance and the greatest explicitness of instructions without loss of initiative to the student. Our courses need a measure of administrative standardization, which need not mean in any sense mechanization. Definiteness as to the demands which a college course may reasonably make on a student's time and effort is the best basis for every attempt toward accuracy in the grading of his work.

CHAPTER VIII

Summary of Conclusions and Recommendations

This chapter brings together in a series of brief statements the more important conclusions and recommendations of the Report. These have been arranged by groups in the order of their general importance; that is, the conclusions and recommendations we consider fundamental have been presented first and in a separate group, other findings and suggestions, even though they may be of more immediate practical interest, being grouped thereafter under special heads. These statements are all subject to the qualification mentioned on page 6; and we summarize them here not in order to insist on each in turn, but in order to bring them into relation to each other and to promote convenience of reference. It seemed desirable thus to present the major results of the Inspection in a grouping indicative of our own interpretation of their relative significance. The numbers in parenthesis refer to pages on which the various conclusions and recommendations are stated or discussed, or on which facts in support of them are given. Evidence and argument from scattered portions of the Report are thus combined to show what seems to us their logical bearing.

I. Conclusions and Recommendations of General Importance

A. Concerning the Study and Regulation of Instruction

Undergraduate teaching should be subject to fuller departmental discussion and supervision (10, 13, 17, 18, 174,

178, 190). The problems of teaching should be given more direct and objective study (4, 9, 10, 15, 88, 95, 96, 101, 178, 190). The normal amount of teaching should be reckoned more exactly and the importance of teaching be given fuller recognition (10, 14, 15, 88, 190).

B. Concerning the Aims and Organization of Courses

The aims of courses should be more clearly defined (17, 25, 171, 173, 174) and students made more fully aware of them (150, 170). The predominantly practical purposes of a large majority of the students (28, 113, 115, 147, 148, 149) should be recognized in the organization of curricula (10, 13, 21, 22, 26, 31, 32, 33, 34, 135, 159, 160, 174).

C. Concerning the Effectiveness of Instruction

Instruction should be more closely adapted to the purposes and needs of the students (10, 12, 13, 87, 151, 152, 161, 162, 166, 176, 177, 189, 192, 197, 211, 224). Personal contact between professors and students should be more frequent (14, 114, 116, 136, 152, 162, 164, 180, 189, 190). Fuller guidance in the choice of courses (116, 150, 174) and in methods of study (13, 14, 87, 165, 192) is desirable. Occasions for participation in class and for reaction on lectures and reading should be more frequent (114, 162, 180, 191). Teaching should have fuller reference to contemporary affairs and the work of students should provide more frequent occasion for direct and personal contact with them (10, 26, 83, 115, 116, 139, 140, 151, 161, 162, 166, 173, 180, 194).

II. Conclusions and Recommendations on Special Topics

A. Concerning the Relation of Economics to Other Subjects

The relations between ranking in Economics courses and ranking in courses in any other subject do not justify

special recommendations (35, 39, 56). As compared with the "typical" Harvard correlation coefficient of 50 per cent, the correlations of Economics A with Mathematics C and with Government 1 are fairly high; other correlations of Economics A are low (52, 57, 58, 59). Government 1 seems to have the closest relation to Economics A and Government in general to Economics (35, 37, 58, 150). Interpretations of correlation coefficients should be made with caution (55, 56, 64, 65, 66); but correlations between Economics marks and admission marks support the belief that admission examinations are poor tests of ability (60, 67, 70).

B. Concerning the Relations of Economics Courses to Each Other

Standing in Economics A does not materially affect the election of advanced instruction in Economics (44, 45); and although men of high rank in Economics A are much more likely to go on to strictly graduate work (44, 46, 50), men of low rank may do well in middle-group courses (50). There are marked differences in the abilities of the groups electing the several advanced courses (50, 51, 57); and in the grading of advanced students there is some arbitrary and avoidable shifting of marks (49, 50, 63).

C. Concerning Marking

Neither the standard distribution of marks for the Department (40) nor the "Probability Curve" (42, 219 ff.) can be taken as a final basis of criticism for course distributions (40, 42, 57). An agreement (mode) is a better basis than an average or median (40, 218). Standards at mid-years and at finals should be the same (41). College marking is at best far too much a matter of chance (197, 202, 203, 206, 213) and every care is needed to make it accurate. (215 ff.) Poor answers in examination books are hardest to grade, and

severe judgments most likely to be erratic (200, 201, 209, 210). The ranking of students and the assignment of grades in fixed proportions according to a standard distribution is to be condemned. (219 ff.)

D. Concerning Details of Instruction

There is great dissatisfaction with assistants and with sections; sections should be given up wherever possible (115, 136, 161, 162, 164, 179, 190). Class discussion as a method is favored by a number of graduates (114), and greater care in the assignment, coördination, and facilitation of reading is desired (151, 152, 161, 162, 166). Memory work is not unduly stressed (106), but devices for sharpening interest could well be multiplied (92, 93, 94, 106). Graduates, advanced students, and students of high standing profit most from lectures; other students get more from other phases of their work (114, 154, 157).

E. Concerning the Students

The purposes of the students are primarily practical, either vocational or social (149, 159, 160), and curricula should be framed to meet their need of practical training (31–34). They choose courses largely on their reputation (150, 174) and are but little able to distinguish the specific values of the instruction they receive (150, 159, 170). In their study they have in mind primarily the requirements of courses (87); and they need guidance in methods of work (87, 88); but they are interested in many contemporary problems (160). Young students are at no disadvantage in Economics courses (71).

SUPPLEMENTS

I. A List of Problems for Investigation

I. The student body.

1. Preparation.

(*a*) Are students admitted to any course too young to profit by the work?

Study age and rank correlations in Economics 1 and perhaps other courses.

Ought the department to restrict admission to its courses by age or class?

(*b*) Are students who have taken History or Civics in high school or History or Government in college at any advantage over other students in Economics A?

Study rank in Economics A of students who have passed in advanced admission History, Economics, or Government; also rank of those who have had History I, Government I, or both in college. Use test questions in Economics A.

Ought the Department to require any preparation courses for Economics A?

(*c*) What requirement of courses in Economics, History, or Government, or other subjects should be made of students admitted to advanced Economic courses?

Study ranks, give tests in class, inspect students' lecture notes, teachers' syllabi.

What sequences of courses ought the Department to insist on?

(*d*) What is the initial equipment of students in the Department? in knowledge of economic data and problems? in power to deal with economic questions?

Test questions in Economics A.

Ought the Department to have a standard test of this sort? What suggestions for the elementary course does it yield?

2. Conditions of study.

(*a*) Are thesis work, reading, and fieldwork economically distributed?

Study incidence of assignments — amounts of reading to be done, theses, etc. in individual cases.

Ought the Department to make more careful rules as to assignments? What is the normal amount of reading and thesis work for an undergraduate course?

3. Personal aims.

(*a*) Are students selecting Economics courses intelligently and purposefully?

Questionnaire as to personal aims, and the value of instruction in subserving them.

What data as to personal aims ought instructors to have and what account ought they to take of such data? What advice as to selection of courses is needed? How should courses be advertised?

(*b*) Are students attempting to secure the degree with distinction with full understanding of its value?

Questionnaire — statistics as to numbers taking degree, failures, etc.

Should any changes in the conditions, announcements, or management of the degree be made?

(*c*) Is concentration in the Department intelligent and purposeful?

Questionnaire — statistics — facts concerning advice given, conferences with instructors, etc.

Ought the Department to guide more carefully students who concentrate?

(*d*) Is candidacy for the Ph.D undertaken with adequate information concerning the values of the degree and of the work for it, and with clear aims?

Study of careers of former candidates — questionnaire — study of thesis subjects — statistics.

Ought the Department to differentiate its work for the Doctorate or dissuade any from attempting it?

4. Social demands.

(*a*) Does the instruction in the Department meet the needs of graduates for economic information and insight?

Questionnaire to graduates and business men in general, economists, and officials. Test questions to students, especially to students who have taken only Economics A and are now in Senior Year or in a Graduate School.

What practical needs ought instruction, especially in Economics A, to meet?

5. Capacity and achievement.

(*a*) What are the factors in the problem presented by the D and E men?

Study individual cases to determine causes of failure and poor work.

Ought the Department to keep more careful and more readily available records of students' work and regulate admission to courses in the light of such records?

(*b*) What can be done to make more effective the work of high-grade men?

Questionnaire as to aims of A and B men and the relations of their work in Economics and in other Departments.

Ought the Department to undertake more careful guidance of the work done by high-grade men?

II. The instruction.

1. Aims.

(*a*) Are the aims of the courses and groups of courses adequately defined?

Study pamphlet, talk with instructors and students, consult economists.

Ought the Department to define the aims of its work more clearly or on a new basis? How should it advertise the work?

2. Scope.

(*a*) What portions of the economic field are not covered by the instruction, if any?

Coöperation of economists. Study of instruction offered in other universities.

Ought the Department to expand its work?

(*b*) Does the instruction provide adequate training in the more important methods of economic investigation and economic thought?

Coöperation of economists. Study of other universities. Inquiry of instructors.

Ought the Department to cover Economic Methods in a separate course, or otherwise?

3. Organization.

(*a*) Is the work so distributed that it meets best the needs of the students?

Study enrollment in courses. Question students and instructors. Coöperation of economists, business men, government officials.

Ought the Department to strengthen certain fields?

(*b*) Is the work so organized that there is a minimum of duplication of effort?

Study students' and instructors' lecture notes — terminology — topics.

Ought the Department to agree upon terms and the treatment of topics?

(*c*) Is the work organized so as to bring the students and instructors into touch with the economic forces and agencies in the outside world?

Study plans of work in courses, conferences, etc., and non-instructional activities of the Department. Coöperation with economists. Other universities.

Ought the Department to plan for more definite contact with the economic world?

(*d*) Is the work so organized as to enable students to acquire insight in the field as a whole and power in special fields?

Study correlation of courses, actual curricula, fields of theses for degrees with distinction, Ph.D. candidates, etc.

Ought the Department to open new possibilities of specialization, and new opportunity for coördination of courses in groups?

(*e*) Is the work so organized as to make full use of the students' related work?

Study correlation of courses in History, Government, Social Ethics, Education, Anthropology, as to hours, periods of history, etc.

Ought the Department to plan more directly for correlation?

(*f*) Is the work so organized as to minimize the disadvantages of large courses?

Study the work of conference and section assistants. What are the variations of method, marking, hours, and results among sections? Question students and instructors. Apply tests.

Ought the Department to divide large courses into smaller courses or use administration measures for further control and improvement of the work done in large courses?

4. Administration.

(*a*) Is there an adequate system of administrative control of instruction?

Study the provisions for administrative control by consultation with members of the Department. Study the plan of administration in other universities.

Ought the Department to devise a more complete system of administrative control and assign the work to members relieved from instruction for that purpose?

(*b*) Is the marking system effectively used?

Tests to determine subjective variations of standard. Curves of marks in courses to determine range of marking. Questionnaire as to aims in the use of marks.

Ought the members of the Department to agree more definitely as to bases for marking and the use of marks?

(*c*) Are examinations in the several courses effectively used?

Study the examination questions: Do they test the student's knowledge? Do they permit instructors to grade students on examinations justly?

Ought the Department to agree upon methods of examination and the use of examinations as tests and as educative exercises? Is there a possibility of agreeing upon the weight examinations ought to have in the make-up of the final mark for a course?

(*d*) Is it possible to devise and apply a standard measure of progress in capacity to handle economic data and solve economic problems?

Get the coöperation of the instructors of the Department and of economists outside the university in devising a series of test questions which can be applied from year to year to show progress in general grasp of economics.

Ought the Department to test students who concentrate in economics and determine in a general way the progress they are making from year to year?

5. Method.

(*a*) Is inductive presentation possible and fruitful in particular courses?

Experiment with inductive and deductive presentation.

Ought instructors to resort as often as possible to inductive procedure?

(*b*) Is it possible to teach economics through the activity of the students themselves in gathering economic data, attempting economic generalizations, and facing economic problems? To what extent can actual economic investigation be used as a means of instruction, in the place of reading and abstract discussion?

Experiment with student activity as a means of instruction.

Ought the Department to organize more opportunities for laboratory and field work?

(*c*) Is the learning of economic facts and principles properly conducted and adequately tested by instructors?

What are the kinds of data instructors think necessary to be learned? Is there any attempt to guide the students in the memorizing of this material? Are tests and discussions sufficiently

frequent to give ample opportunity for recall and application of the material?

Ought the instructors to make a closer study of the presentation of those parts of their material which they expect students to retain exactly in mind?

III. The staff.

1. Size.

(*a*) Is the staff adequate for the work to be done? Is the work properly distributed?

Personal data from instructors. Inquiries among students concerning value of conferences with assistants.

Ought the Department to try to secure more men, or more men of a given rank?

2. Selection.

(*a*) What is the method of nomination of new members of the staff and what are the recognized requirements for appointment? Is there any differentiation of requirements for different kinds of work, such as emphasis on teaching power for work in Economics A?

Inquiry and general discussion.

Ought the Department to adopt a more clearly defined policy in the selection of teachers?

3. Organization.

(*a*) Is the organization of the staff sufficiently definite, so that responsibility for the achievement of specific aims rests clearly on individuals?

Inquiry among members of the staff and general discussion.

Ought the Department to group courses for more definitely educational purposes, and divide responsibility for the accomplishment of them?

4. Diverting interests.

(*a*) What outside work do members of the staff undertake and what relations do such tasks bear to the work of instruction?

Personal inquiry among members of the staff.

Ought the Department to define more clearly

the duties which may properly be undertaken as professional activity by members of the staff and arrange instruction accordingly?

IV. Equipment and resources.

(*a*) What does instruction in Economics cost, as a whole, and by courses, both absolutely and in comparison with other subjects? Is the cost reasonable, considering the results?

II. Theses in College Courses

The writing of theses in college courses — how many are required, of what length, at what times, of what value to the student, under what standards of content and of form — may be pictured in some detail from the replies to a questionnaire sent to Seniors in June, 1914, by the Committee on the improvement of students' English. This study was made by a member of the Division of Education serving on the Committee and is here for the first time reported in full.

The questionnaire read as follows:

In accordance with the request of the Board of Overseers, a Committee has been appointed to suggest methods of improving the quality of English written by students in college. The Committee will be greatly obliged to you if you will fill out this blank and mail it at once in enclosed envelope. Please do this with as much accuracy as possible, and *without delay*.

CHARLES H. GRANDGENT, *Chairman*.

Course	Subject of Thesis	Length (in words approximately)	Date when student was informed of thesis requirement and subject	Date when thesis was handed in
1. Name of student:				
2. Theses written in 1913–14.				
3. Other larger pieces of written work (not including those in courses in English Composition)				

4. How far were your theses (and other like tasks) marshalled conveniently, how far did they come due at dates inconveniently near each other?
5. Were you notified that the English used, the style and arrangement, were of importance?
6. How much attention did you actually pay to these matters?
7. Remarks and suggestions:

Four hundred and twenty-two blanks were sent out and ninety-four replies received. The following table shows the number of theses and "other larger pieces" written during 1913–14 by the ninety-four students who replied.

Total number of students	=	94			
Number having no theses	=	13			
" "	1	thesis	=	21	
" "	2	theses	=	21	
" "	3	"	=	13	
" "	4	"	=	11	
" "	5	"	=	3	
" "	6	"	=	3	
" "	7	"	=	2	
" "	8	"	=	2	
" "	9	"	=	1	
" "	10	"	=	0	
" "	11	"	=	0	
" "	12	"	=	1	
" "	13	"	=	3	

Some students evidently suffer from a "congestion" of thesis requirements — not so many as to make this disadvantage an excuse for general laxity in students' English, but enough to make it apparent that instructors should use care in assignments.

The following table shows the "thesis-economy" of these students from another angle. It presents what may be called the "total-word-burden" of thesis writers during an academic year.

Students writing in all				not more than	5000	words				=	17
"	"	"	"	between	5000	and	10,000	words		=	17
"	"	"	"	"	10,000	"	15,000	"		=	11
"	"	"	"	"	15,000	"	20,000	"		=	11

Students writing in all between					20,000	and	25,000	words	— 6
"	"	"	"	"	25,000	"	30,000	"	— 3
"	"	"	"	"	30,000	"	35,000	"	— 2
"	"	"	"	"	35,000	"	40,000	"	— 0
"	"	"	"	"	40,000	"	45,000	"	— 1
"	"	"	"	"	45,000	"	50,000	"	— 3
"	"	"	"	50,000 or more words					— 2
Students writing *no* theses									— 21

A few students evidently have to write far too much in the course of a college year — not so many, again, as to account for generally poor English in the College, but enough to make clear the need of care in managing assignments.

The average length of theses, in words, is 8079; of "other large pieces," 3626.

The following table shows how the theses were marshalled throughout the year — that is, it shows how many students were writing at a certain rate in any given month: e. g., in March, five students were writing at the rate of 20,000 to 40,000 words.

Number of students writing at various rates (in hundreds of words) in the several months of the Academic Year

	0–20	20–40	40–60	60–80	80–100	100–120	120–140
October	2	10	1	6	0	3	1
November	4	7	9	4	1	1	3
December	4	12	3	2	1	0	0
January	8	6	1	2	1	0	0
February	3	4	3	0	2	1	0
March	9	5	4	3	3	1	0
April	9	5	5	2	1	2	0
May	7	1	1	0	0	0	0

Some students are plainly "rushed" in their thesis work. The testimony of the replies shows that 54 men found their theses conveniently marshalled and 17 found them incon-

veniently marshalled. Twenty-three gave no testimony on this point.

The average length of time for the preparation of a thesis was two and three-fifths months — a fair period for a thesis of reasonable length, if the materials are available without prolonged search and if they are not unduly difficult to assemble and present.

Thirty-four men were notified that "the English used, the style and arrangement, were of importance"; forty-nine were not so notified; eleven made no answer on this point. Twenty-eight paid considerable attention to English; forty-six paid little attention to it; six none. Twelve made no statement concerning their effort to write well and two answers were doubtful. Neither instructors nor students pay enough attention to the English used in theses.

Special mention of theses in Economics courses occurs in some replies and is implied in others. The trend of this testimony may best be seen from the following quotations:

Paper No. 1. Economics courses in which theses were written: 4a, 6a, 2b, 4b.

> "In the Economic courses I paid very little attention to English, mostly because I did not have time and it was not required, and secondly, because I felt that my instructor did not know much more English than I did. This is not in praise of myself, but more a criticism of the instructor. If there had been more room on the paper I could have told you more. I feel very strongly against the present young instructor at Harvard. Of course they get the best for the money that is given for that purpose, but I have seen too many that do not understand young men and are very hard to approach."

Paper No. 5. Economics courses, etc.: 4a, b4.

> "The whole system of assigning work seems rather slipshod. When work is arranged conveniently it is rather by chance than by any systematic plan."

Paper No. 6. Economics courses: 4a.

"My only suggestion would be to announce the subject of the thesis at the beginning of the year and let the student who has more than one choose his own time for doing it before mid-year; also put a slight requirement on good English."

Paper No. 15. Economics courses: 4a, 9, 33.

"No particular emphasis was placed on these qualities, although all insisted upon bibliographies, and in some cases, critical bibliographies."

"Although theses are very valuable in most courses, I think there can be too much of a good thing. *Life* for me this year has been one thesis after another — 'with a little profanity thrown in.'"

Paper No. 23. Economics courses: 4a.

"If advice in conferences on theses was not limited to scope and sources but included also a detailed consideration of arrangement of material, a gain in clearness, if nothing else, would result."

Paper No. 25. Economics courses: 4a, 4b.

"Reports such as those in Economics 4a and 4b have to contain many statistics and are not well adapted to literary style."

Paper No. 27. Economics courses: 33.

"Only in the Economics 33, for distinction, was much attention to such given."

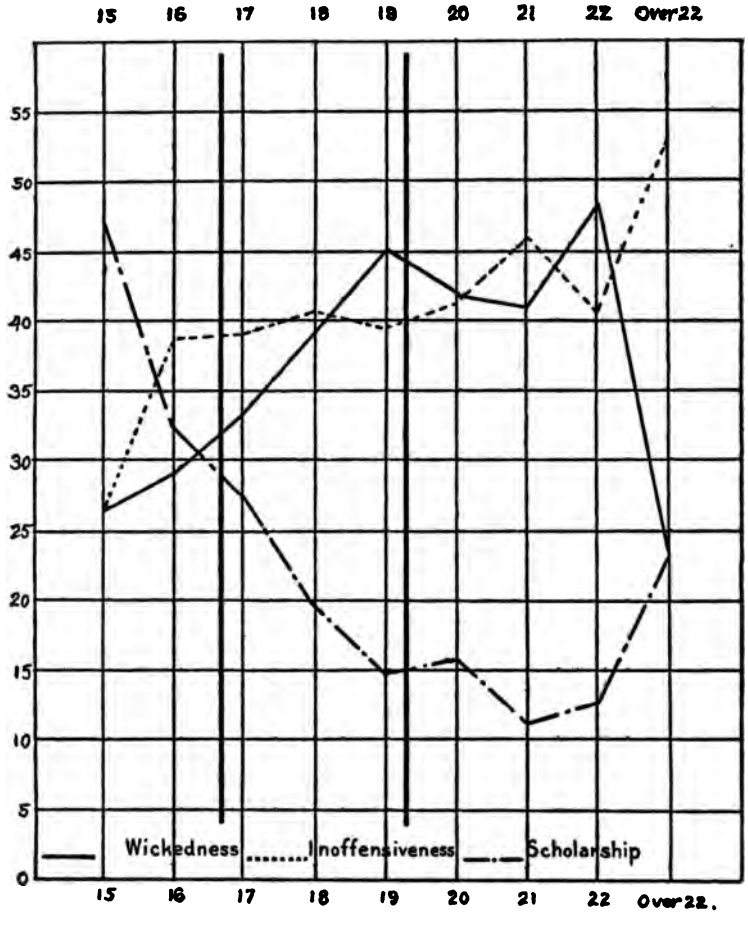
"Concerning pure research, in many courses, too much emphasis should not be placed on the English and style, for the student may have but a poor store at his command, and yet prepare a valuable work."

III. Age and Scholarship

The general relation between age, scholarship, and academic discipline is shown by the following quotations and charts from an article in the Harvard Graduates' Magazine for June, 1913.

The facts which are used in this study were gathered from the college records of 5769 students — all the "regular" Freshmen en-

CHART I.


15
16
17
18
19
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Over22
55
50
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40
35
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Wickedness
Inoffensiveness
Scholarship
15
16
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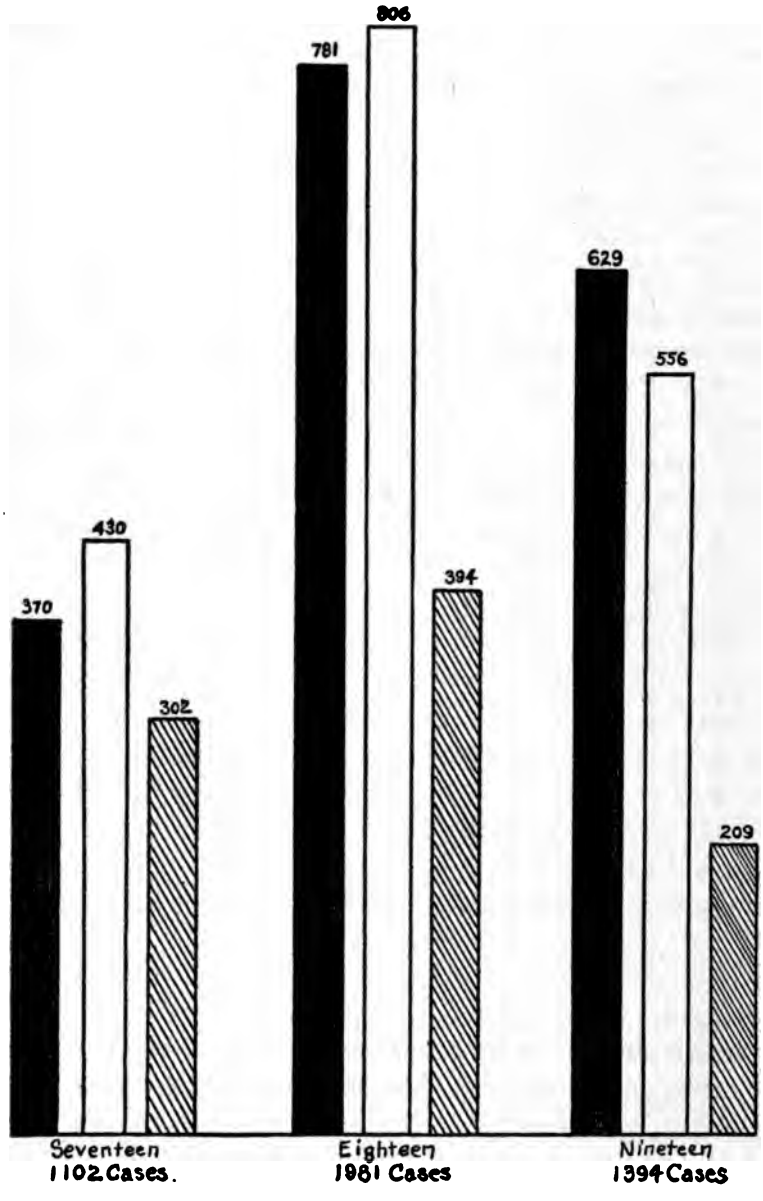
Over22.

CHART II.


370
430
302
781
806
394
629
556
209
Seventeen
1102 Cases.
Eighteen
1981 Cases
Nineteen
1394 Cases

tering in the classes from 1902 to 1912 inclusive — that is, all the students in these classes except those who entered as "special" students, or as "unclassified" students, or as students admitted from other colleges. Each record was classified, according to the student's age at entrance, to show whether he had been (1) admonished, (2) on probation once, (3) on probation more than once, (4) visited with severer discipline (such as suspension), or (5) expelled permanently. The cases of students who left "for other than disciplinary reasons" were separately recorded. Also, the cases of students who achieved the degree *cum laude* or better, were separately recorded. The rest were classified (with no disparagement to their claims for distinction on other grounds) as students "of no record." The classification was in fact much more complicated than this, distinguishing discipline "for low rank" and "for conduct" and dividing the records in other ways; but for present purposes the groupings just named are most significant.

The summarized results of this labor are simple and striking. Of the total number of students entering at each age from 15 to 22, they show what proportion got into "trouble" of any sort with the College Office, what proportion achieved at least the lowest form of regular academic commendation at Commencement, and what proportion escaped both discipline and distinction. The three curves plotted on the following chart present these facts in graphic form.

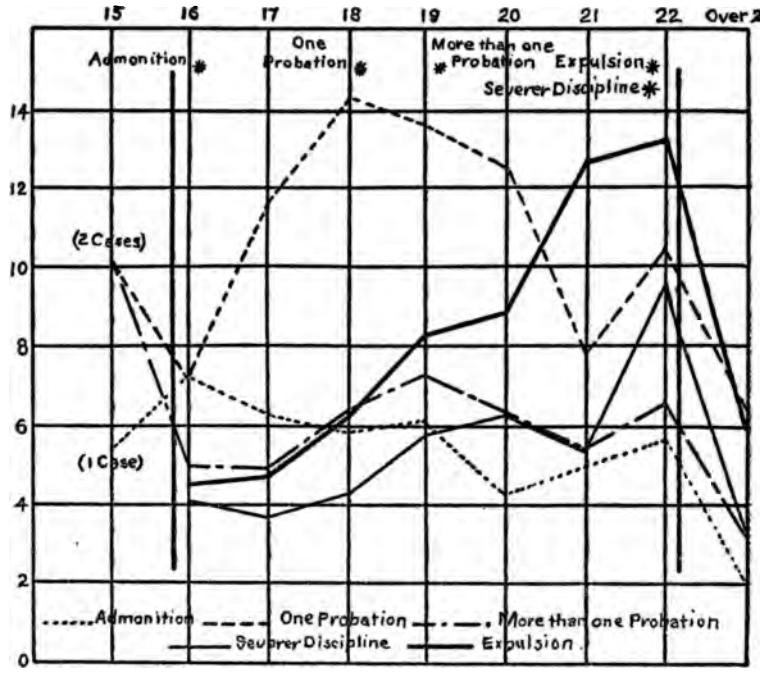
The points in these curves indicate, of course, percentages. Thus, of the total number who entered at 18, 39.40 per cent were at least admonished by the College Office, which is shown by a point on the black curve of "wickedness"; 40.69 per cent were "of no record," which is shown by a point on the dotted curve of "inoffensiveness"; and 19.80 per cent graduated *cum laude* or better, which is shown by a point on the broken curve of scholarship.

After accuracy in compilation, the importance of statistics depends on the number of cases recorded. Because the group that entered at 15 shows the highest percentage of scholarship and the lowest percentage of "wickedness" we can by no means safely conclude that fifteen-year-old boys would be the best population we could get for a Freshman dormitory. There are only 19 cases in the whole group. The sixteen-year-old boy group is larger, but still too small for safe conclusions — 218 cases. The groups entering at 20 and over are also small. But the groups recorded between the two heavy vertical lines — the seventeen, eighteen, and nineteen-year-old groups — are all large and not too widely disproportionate: 1102 cases at 17, 1981 cases at 18, 1394 cases at 19. These numbers are great enough to give us a fair basis for argument. The continuous rise in the "wick-

edness" curve, and the continuous drop in the scholarship curve, carrying across the lines for these three big groups, show a real tendency, on which we may rely.

This tendency is clearly in favor of youth. *The college gets better average results, with less friction, from younger men than from older men.* Possibly this fact may be shown more clearly by a chart of columns representing actual numbers than by a chart of curves representing percentages. See Chart II.

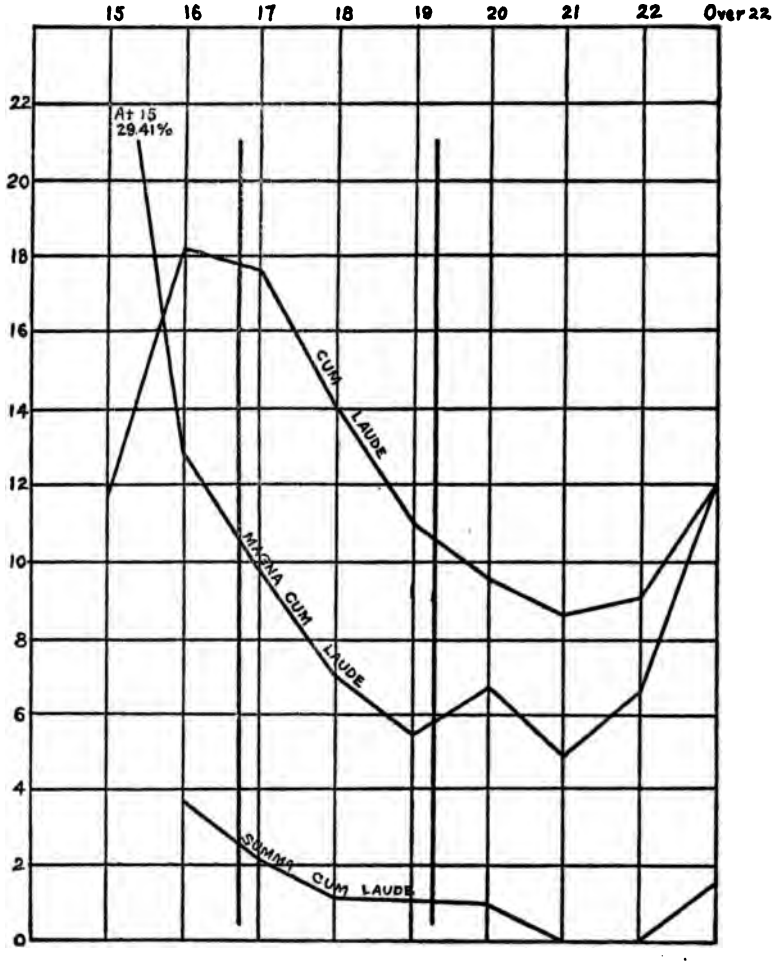
CHART III.



Here the three groups of columns represent together all the students admitted at the ages really in question — 17, 18, and 19. The numbers for these ages do not vary so markedly as to hide the true proportions of the columns in each group — the black column for college "sinners," the white column for college "common folks," the shaded column for college "saints." If Dean Hurlbut and Mr. Cram could meet (say in the Yard at the opening of the year) three groups of entering students prophetically divided as these columns indicate, there would be small doubt as to which group they would welcome most heartily to Harvard College.

Now it may seem that in all this there is too much "lumping" of results. "Trouble" means anything, from admonition — a simple warning from the guardian of college morals — to complete disinheritance by a mortally offended *Alma Mater*. This might obscure

CHART IV.



such differences in the tendencies of "youth" and "age" to give concern to the Administrative Board as would really vitiate conclusions about the relative burden of transgression among young men and old. Perhaps among older students "a word to the wise is sufficient,"

whereas among younger ones hot heads cannot be restrained with warnings. As a fact, the exact opposite is the case. Chart III shows "wickedness" analyzed into its several categories. The proportion of students of a given entrance-age who finally reach any circle of this Inferno can be found by noting the point where each curve crosses the line for that age.

The significant thing about this chart is the point, marked by an appropriate star, at which falls the largest percentage of students receiving each particular kind of college censure. Among the younger students the proportion content with the milder college punishments is large; as we go up the ages the severer penalties claim a greater share. Quite a different result would not have been surprising.

Scholarship, analyzed, shows an analogous result. The younger men have an advantage over the older, except that the oldest — those who entered at 22 and over — show some superiority when compared with those who entered a year or two earlier. The curve for the *magna cum laude* men is slightly irregular; but the chart as a whole shows the same relation of age to the several grades of scholarships as is indicated by the curve for the "lumped" result, in Chart I. It is not especially surprising, of course, that the younger men, up to a certain age, are better students, on the average, than their older classmates. But it is worth noting that the superiority of the younger men persists, through the three important ages, for every grade of scholarship. See Chart IV.

IV. Accounts and Acknowledgments

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V. A List of Documents and Materials Used in Course of the Inspection

1. Pamphlets of the Division of History, Government, and Economics, 1912–13, 1913–14, 1914–15, 1915–16.

2. Report of the Committee appointed by the Department of Economics to consider Courses of Instruction.

3. Votes passed by the Department of Economics concerning courses.

4. Outline of a Plan for a General Final Examination in the Division of History, Government, and Economics.

5. Division Examinations for the Degree of A.B., 1915–16.

6. Schedule of courses in approved specific fields of concentration within the Department of Economics.

7. Letter from Professor Bullock, March 7, 1913, concerning guidance given to students by members of the Department.

8. Letter from Professor Bullock, November 10, 1914, concerning coördination of courses in the Department.

9. Report of Mr. John Wells Morss of the Visiting Committee for the Department concerning section meetings in Economics A.

10. Statement by the Committees on Practical Training appointed by the American Political Science Association and The American Economic Association.

11. Preliminary Report of the Committee on Practical Training, American Political Science Association, Proceedings 1913–14.

12. Questionnaire on Field Work issued by the American Association of Urban Universities.

13. Article on Sequence of Courses in Economics at the University of Chicago, *Journal of Political Economy*, Vol. XXI, No. 1, Leon C. Marshall.

14. Article on the College of Commerce and Administration of the University of Chicago, *Journal of Political Economy*, Vol. XXI, No. 2, Leon C. Marshall.

15. Survey Summary, University of Wisconsin Survey.

16. Comment of the University Committee on the Survey Summary.

17. Miami University Bulletin, Series XI, No. 10.

18. Bulletin of the Massachusetts Institute of Technology, Vol. 46, No. 2.

19. Efficiency Measurement in College, *Harvard Alumni Bulletin*, Vol. XVI, No. 8, President Lowell.

20. College Studies and Professional Training, *Educational Review*, Vol. 42, No. 3, President Lowell.

21. Tests of College Efficiency, Report of a Special Committee of the Oberlin College Faculty, 1908–9.

22. Academic and Industrial Efficiency, Bulletin No. 5, The Carnegie Foundation for the Advancement of Teaching, 1910.

23. School and University Grades, Bulletin of the University of Wisconsin, No. 368, Walter F. Dearborn.

24. The Relative Standing of Pupils in the High Schools and in the University, Bulletin of the University of Wisconsin, No. 312, Walter F. Dearborn.

25. Scientific Grading of College Students, University of Pittsburgh Bulletin, Vol. 8, No. 21, Raymond W. Sies.

26. Scientific *vs.* Personal Distribution of College Credits, *Popular Science Monthly*, April, 1911, President William T. Foster.

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